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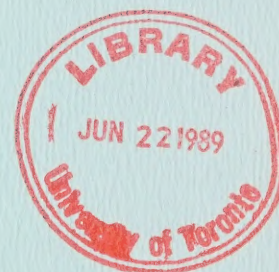
VOLUME: 112

DATE: Wednesday, June 14th, 1989

BEFORE: M.I. JEFFERY, Q.C., Chairman

E. MARTEL, Member

A. KOVEN, Member



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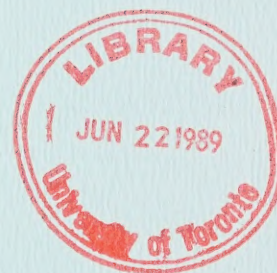
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HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL
RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR
TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental
Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental
Assessment for Timber Management on Crown
Lands in Ontario;

- and -

IN THE MATTER of an Order-in-Council
(O.C. 2449/87) authorizing the
Environmental Assessment Board to
administer a funding program, in
connection with the environmental
assessment hearing with respect to the
Timber Management Class
Environmental Assessment, and to
distribute funds to qualified
participants.

Hearing held at the Ramada Prince Arthur
Hotel, 17 North Cumberland St., Thunder
Bay, Ontario, on Wednesday, June 14th,
1989, commencing at 9:00 a.m.

VOLUME 112

BEFORE:

MR. MICHAEL I. JEFFERY, Q.C.	Chairman
MR. ELIE MARTEL	Member
MRS. ANNE KOVEN	Member

A P P E A R A N C E S

MR. V. FREIDIN, Q.C.)	MINISTRY OF NATURAL
MS. C. BLASTORAH)	RESOURCES
MS. K. MURPHY)	
MS. Y. HERSCHER)	
MR. B. CAMPBELL)	MINISTRY OF ENVIRONMENT
MS. J. SEABORN)	
MR. R. TUER, Q.C.)	ONTARIO FOREST INDUSTRY
MR. R. COSMAN)	ASSOCIATION and ONTARIO
MS. E. CRONK)	LUMBER MANUFACTURERS'
MR. P.R. CASSIDY)	ASSOCIATION
MR. J. WILLIAMS, Q.C.	ONTARIO FEDERATION OF
MR. B.R. ARMSTRONG	ANGLERS & HUNTERS
MR. G.L. FIRMAN	
MR. D. HUNTER	NISHNAWBE-ASKI NATION and WINDIGO TRIBAL COUNCIL
MR. J.F. CASTRILLI)	
MS. M. SWENARCHUK)	FORESTS FOR TOMORROW
MR. R. LINDGREN)	
MR. P. SANFORD)	KIMBERLY-CLARK OF CANADA
MS. L. NICHOLLS)	LIMITED and SPRUCE FALLS
MR. D. WOOD)	POWER & PAPER COMPANY
MR. D. MacDONALD	ONTARIO FEDERATION OF LABOUR
MR. R. COTTON	BOISE CASCADE OF CANADA LTD.
MR. Y. GERVAIS)	ONTARIO TRAPPERS
MR. R. BARNES)	ASSOCIATION
MR. R. EDWARDS)	NORTHERN ONTARIO TOURIST
MR. B. McKERCHER)	OUTFITTERS ASSOCIATION
MR. L. GREENSPOON)	NORTHWATCH
MS. B. LLOYD)	

APPEARANCES: (Cont'd)

MR. J.W. ERICKSON, Q.C.)	RED LAKE-EAR FALLS JOINT
MR. B. BABCOCK)	MUNICIPAL COMMITTEE
MR. D. SCOTT)	NORTHWESTERN ONTARIO
MR. J.S. TAYLOR)	ASSOCIATED CHAMBERS OF COMMERCE
MR. J.W. HARBELL)	GREAT LAKES FOREST
MR. S.M. MAKUCH)	
MR. J. EBBS	ONTARIO PROFESSIONAL FORESTERS ASSOCIATION
MR. D. KING	VENTURE TOURISM ASSOCIATION OF ONTARIO
MR. D. COLBORNE	GRAND COUNCIL TREATY #3
MR. R. REILLY	ONTARIO METIS & ABORIGINAL ASSOCIATION
MR. H. GRAHAM	CANADIAN INSTITUTE OF FORESTRY (CENTRAL ONTARIO SECTION)
MR. G.J. KINLIN	DEPARTMENT OF JUSTICE
MR. S.J. STEPINAC	MINISTRY OF NORTHERN DEVELOPMENT & MINES
MR. M. COATES	ONTARIO FORESTRY ASSOCIATION
MR. P. ODORIZZI	BEARDMORE-LAKE NIPIGON WATCHDOG SOCIETY
MR. R.L. AXFORD	CANADIAN ASSOCIATION OF SINGLE INDUSTRY TOWNS
MR. M.O. EDWARDS	FORT FRANCES CHAMBER OF COMMERCE
MR. P.D. McCUTCHEON	GEORGE NIXON

(iii)

APPEARANCES: (Cont'd)

MR. C. BRUNETTA

NORTHWESTERN ONTARIO
TOURISM ASSOCIATION

I N D E X O F P R O C E E D I N G S

<u>Witness:</u>	<u>Page No.</u>
<u>J. JOSEPH CHURCHER,</u>	
<u>EDWARD ISKRA,</u>	
<u>ROBERT L. GALLOWAY,</u>	
<u>ROBERT A. CAMPBELL,</u>	
<u>MICHAEL EDWIN BUSS,</u>	
<u>PETER PHILLIP HYNARD,</u>	
<u>CINDY STERN KRISHKA,</u>	
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I N D E X O F E X H I B I T S

<u>Exhibit No.</u>	<u>Description</u>	<u>Page No.</u>
622A	Revised version of Exhibit 622.	18595
643A	Revised version of Exhibit 643.	18596
644A	Document entitled: 1986 Provincial Aerial Herbicide Review for Northern Ontario.	18596
646	Document entitled: Aerial Spraying for Forest Management, an Operational Manual, dated 1981.	18597
647	Document entitled: Aerial Spraying for Forest Management Sample Project Descriptions, dated January, 1982.	18597
648	OFAH Interrogatory Question No. 2; MOE Interrogatory Question No. 4; FFT Interrogatory Question No. 8; OFIA/OLMA Interrogatory Question No. 15 (Panel 12); and OFIA/OLMA Interrogatory Question No. 28 (Panel 13).	18598
649	MNR interrogatory responses to OFIA/OLMA Question Nos. 2, 5, 14, 15, 17, 19, 21 and 22; OFAH Question No. 7 (Panel 12).	18630
650	MNR interrogatory responses to OFIA/OLMA Question Nos. 3, 11, 12, 28 and 29.	18630
651	Excerpt from a textbook authored by Professor John Walstead, 1987.	18644

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<u>Exhibit No.</u>	<u>Description</u>	<u>Page No.</u>
652	Document representing comparison between chemical cleaning information from FFT Interrogatory response No. 5, and manual cleaning information from OFIA Interrogatory response No. 15 prepared by OFIA.	18656
653	Graphical depiction for comparative purposes of numerical values on Exhibit 620N and manual cleaning figures represented on Exhibit 652.	18665
654	Graph prepared by Mr. Hynard representing tending funding in four northern regions for 1988-89 (actual) and 1989-90 (estimate).	18717
655	Extract from Guide to Weed Control, Ontario Ministry of Agriculture and Food, Publication No. 75.	18726
656	Response to OFIA Interrogatory 1 No. 5 (Panel 13).	18777
657	Response to Forests for Tomorrow Interrogatory No. 14 (Panel 12).	18782
658	Extract from the Canadian Forestry Service, Selected Forestry Statistics, Ontario, 1987.	18784
659	Volume of MNR response material to OFIA Interrogatory No. 8.	18812

1 ---Upon commencing at 9:08 a.m.

2 THE CHAIRMAN: Thank you. Be seated.

3 MS. MURPHY: Thank you, Mr. Chairman.

4 For the record, I have a few documents to file before
5 we commence and then Mr. Iskra will be completing his
6 presentation.

7 First of all, I have the hard copies of
8 Mr. Iskra's photos and I believe those were marked or
9 given an exhibit number, 642 I believe.

10 THE CHAIRMAN: Right.

11 MS. MURPHY: (handed)

12 THE CHAIRMAN: Thank you.

13 MS. MURPHY: And you will recall I
14 mentioned last week that there would be some correction
15 to Exhibit 621, that was the exhibit that dealt with
16 number of reported injuries and days of lost time.

17 I have that corrected version now. The
18 original is Exhibit 621 (sic) and I would suggest we
19 make this 621A (sic) or B to keep them together.

20 THE CHAIRMAN: Very well. 621A (sic).

21 MS. MURPHY: And that document is dated
22 June 6th, 1989.

23 ---EXHIBIT NO. 622A: Revised version of Exhibit 622.

24 MS. MURPHY: The next one, Exhibit 643,
25 which was the Reffle Report, I have an addition as well

1 to that exhibit which I would suggest we mark as
2 Exhibit 643A, and this is a note on errata which
3 includes a better copy of a map and an appendix to that
4 document.

5 THE CHAIRMAN: Okay, 643A.

6 MS. MURPHY: (handed)

7 THE CHAIRMAN: Thank you.

8 ---EXHIBIT NO. 643A: Revised version of Exhibit 643.

9 MS. MURPHY: And Exhibit 644, which was
10 identified as an Arbuckle Report from 197 -- 1986,
11 rather. I have an addition to that document.

12 The part that you had was the part that
13 dealt with the insecticide program and this part deals
14 with the herbicide program.

15 It is called: 1986 Provincial Aerial
16 Herbicide Review for Northern Ontario. It is the other
17 half of that document and I suggest you mark that one
18 as 644A. They really belong together.

19 THE CHAIRMAN: Very well.

20 MS. MURPHY: (handed)

21 ---EXHIBIT NO. 644A: Document entitled: 1986
22 Provincial Aerial Herbicide
Review for Northern Ontario.

23 MS. MURPHY: Mr. Nicholson was referring
24 to two further documents last week and I think for the
25 purposes of the record we should file them. They are

1 both fairly lengthy documents.

2 I have enough for the Board and for an
3 exhibit, and they been produced to some of my friends
4 already on request. I will have to make arrangements
5 for other copies for those that need them.

6 I believe we are at Exhibit 646; is that
7 correct?

8 THE CHAIRMAN: Yes, that's right.

9 MS. MURPHY: Then for Exhibit 646 the
10 document is entitled: Aerial Spraying for Forest
11 Management, an Operational Manual, and that's dated
12 1981.

13 And Exhibit 647, Aerial Spraying for
14 Forest Management, Sample Project Descriptions, and
15 that's dated January 1982.

16 THE CHAIRMAN: Very well.

17 MS. MURPHY: (handed)

18 THE CHAIRMAN: Thank you.

19 ---EXHIBIT NO. 646: Document entitled: Aerial
20 Spraying for Forest Management,
an Operational Manual, dated
21 1981.

22 ---EXHIBIT NO. 647: Document entitled: Aerial
23 Spraying for Forest Management
Sample Project Descriptions,
dated January, 1982.

24 MS. MURPHY: And lastly we have a final
25 set of interrogatories that we would like to file as

1 Exhibit 648, and those are Ontario Federation of
2 Anglers & Hunters Interrogatory to Panel 12 Question 2;
3 Ministry of the Environment Interrogatory to Panel 12
4 Question 4; Forests for Tomorrow Interrogatory to Panel
5 12 Question 8; Ontario Forest Industry Association/
6 Ontario Lumber Manufacturers' Association Interrogatory
7 to Panel 13 Question 28; and Ontario Forest Industry
8 Association/Ontario Lumber Manufacturers' Association
9 Interrogatory to Panel 12 Question No. 15.

10 (handed)

11 THE CHAIRMAN: Thank you.

12 ---EXHIBIT NO. 648: OFAH Interrogatory Question No. 2,
13 MOE Interrogatory Question No. 4;
14 FFT Interrogatory Question No. 8;
15 OFIA/OLMA Interrogatory Question
16 No. 15 (Panel 12; and OFIA/OLMA
17 Interrogatory Question No. 28
18 (Panel 13).

17 MS. MURPHY: Mr. Cronk has just noticed
18 that I have made an error. The first document I gave
19 you which was the revision to the injuries, I advised
20 that that was an amendment to Exhibit 621 and in fact
21 is an amendment to Exhibit 622.

22 THE CHAIRMAN: Okay. We will change that
23 then.

24 MS. MURPHY: Thank you.

25 J. JOSEPH CHURCHER,

1 EDWARD ISKRA,
2 ROBERT L. GALLOWAY,
3 ROBERT A. CAMPBELL,
4 MICHAEL EDWIN BUSS,
5 PETER PHILLIP HYNARD,
6 CINDY STERN KRISHKA,
7 STEPHEN NICHOLSON, Resumed

8 CONTINUED DIRECT EXAMINATION BY MS. MURPHY:

9 Q. And, Mr. Galloway, could you just
10 take a minute and explain the amendment that was made
11 to that document, and that is now Exhibit 622A?

12 MR. GALLOWAY: A. Yes. As I mentioned,
13 when we entered it the first time, we did this in a
14 rapid turnaround to request from the districts and we
15 had asked them that it be injuries to MNR staff because
16 we could not get detailed information on injuries to
17 either FMA staff or totally contracted jobs because we
18 would not have records of those injuries and lost time,
19 and some of the returns included the injuries to
20 contractors.

21 So in the bottom of the 622A now, you
22 will note there is a note there that eight employees of
23 contractors, for example, in Blind River, three
24 employees in Thunder Bay were included in the original
25 one.

26 Q. So the note at the bottom still
27 refers to those incidents but the numbers at the top
28 have been altered?

1 A. That's right. Just so that the
2 comparison can be between the same, the MNR jobs of
3 manual and aerial.

4 Q. And I understand that there are a
5 couple of other amendments to the document and they are
6 all underlined so one can see the changes?

7 A. That's correct.

8 Q. All right. Mr. Iskra, I guess we
9 finished last week as you were commencing your
10 presentation and I think we might as well just
11 continue.

12 MR. ISKRA: A. Yes. Could I have
13 somebody dim the lights for me, please. And the
14 projector, Mr. Thornton. Thank you.

15 Is that adequate for everyone to see?

16 THE CHAIRMAN: (nodding affirmatively)

17 MR. ISKRA: This is photo 3.4.3 from
18 Panel 13 Volume II and it shows a complete fueling
19 system consisting of a grounded tank and a pump which
20 is currently under a tarp. A cylinder here
21 (indicating), an aluminum cylinder which is a fuel --
22 three-stage fuel filter, and this post with the yellow
23 reel is the grounding system.

24 The tank itself is grounded. This post
25 is the actual grounding rod and the hose -- there is a

1 reel -- there is a grounding reel that goes to the
2 aircraft, and the hose has a bonding clip which bonds
3 directly to the aircraft as -- prior to fueling.

4 Fire extinguishers are strategically
5 placed. In our application boss manual there is a
6 section dealing where fire extinguishers go throughout
7 a project. The system is adapted from the aviation and
8 fire management section. Where this type of fueling
9 system is required, this whole mechanism is in place
10 throughout the province.

11 Pilots are responsible for fueling
12 aircraft and MNR staff can only assist and the Ministry
13 policy is no hot fueling; that is, the aircraft has to
14 be shut off completely before any fueling takes place.

15 This is a poor picture to see the berm
16 here, but I believe in the last two photos previous to
17 this I noted that.

18 This post here has hazard signs, dust
19 control, non-smoking signs, including no entry,
20 unauthorized persons and pesticide storage area signs.

21 This is photo 3.6.1 and it shows bulk
22 delivery of tanker trucks containing the pesticide BT
23 being pumped out into the temporary storage tanks.

24 MR. MARTEL: What number is that one, Mr.
25 Iskra?

1 MR. ISKRA: I will have to check mine.

2 MS. MURPHY: That is 3.6.1. It is on
3 page 418.

4 MR. ISKRA: One of these bulk tankers
5 contains 25,000 litres or the equivalent in drums,
6 about 120 drums. So any type of delivery like this
7 reduces a lot of labour intensive work, unloading and
8 pumping out each of these drums into the storage tanks.

9 This is photo 3.6.2 which is a label --
10 pesticide labels that are on the drums or placed on the
11 temporary storage tanks.

12 The label contains information as the
13 product name; the application rates -- the range of
14 application rates; the hazards, if it is flammable,
15 harmful if swallowed, those types of hazards; use
16 restriction for application; the active ingredient; it
17 also has first-aid information. This is required under
18 the Pest Control Products Act, all this information.

19 Sometimes the label has an appended
20 little pamphlet, such as Vision drums would have for
21 use restrictions. As well material safety data sheets
22 are supplied. These sheets were supplied several years
23 back, as far as I can remember, long before WHIMIS came
24 to be.

25 This is photo 3.6.5 and it shows barrel

1 operations. The label you see is on this drum here.
2 (indicating) What I would like to describe here is
3 what Mr. Galloway referred to as the closed system.
4 The closed system consists of what is called a drybreak
5 fitting, and that's d-r-y-b-r-e-a-k, and this fitting
6 enables an individual to make a connection and
7 disengage that connection without being able to turn a
8 valve.

9 So the fitting -- you cannot turn a hose
10 on unless it is coupled with the other piece of a
11 fitting that would be screwed into the drum or an
12 aircraft. That part of the fitting is called a buckeye
13 fitting and all spray craft have those fittings,
14 pesticide mixing units would have those and they are
15 designed to be leakproof and foolproof.

16 Once these drums have been pumped out,
17 they are then rinsed, triple rinsed, and a description
18 of this method would be, we would fill the drum with up
19 to one third water, probably around that 30 per cent
20 mark, roll the drum around and empty it into a holding
21 tank, a temporary holding tank, we call it a rinsate
22 tank. We would do this three times.

23 That's fairly labour intensive. We
24 usually like to turn on some good music while we
25 agitate the drums. And the same procedure is done for

1 the BT holding tanks which are hosed -- the inside is
2 hosed with water and them pumped out. And all this
3 rinsate is then at the end of the project, or sometimes
4 partway through it during non-spray periods you would
5 spray the rinsate out on to one of these treatment
6 areas.

7 This is photo 3.7.1, classroom training.
8 This one here in particular is of the application boss
9 course. These training courses and workshops are put
10 on by the MNR for both MNR staff and industry and now
11 it consists of an even mix of field practical
12 experience and class theory. It lasts close to a week.
13 I believe this year it will be in Kapuskasing.

14 MS. MURPHY: Q. And I understand that
15 you teach at those courses, do you, Mr. Iskra?

16 MR. ISKRA: A. Yes. MNR has a directive
17 encouraging all staff using pesticides to be trained as
18 licensed exterminators as well.

19 This is photo 3.7.2. It is what I would
20 call a briefing session. The mix and load staff and
21 some of other people gather around with the pilot and
22 we go over the aircraft, the dangers of working around
23 the aircraft, where to stand in case you are climbing
24 up into the hopper for any reason, or up to look into
25 the hopper, in case the aircraft has to be pushed or

1 manoeuvred around into position if there is a problem.

2 We discuss things like emergency
3 procedures, facilities on the runway, what we would do,
4 the location of the ELT, master switch for the pilot in
5 case we would have to shut the machine off, and just a
6 general going over of the aircraft and the capabilities
7 before we start the project.

8 Q. And would you explain for the record
9 what ELT is?

10 A. It is a transmitter. In the event of
11 an aircraft crash, this ELT would go off and the signal
12 would be received on a particular radio frequency and
13 which would be then monitored and I believe there would
14 be a national response to locate that.

15 I think Mr. Martel might be a little more
16 familiar with how that ELT system works. I guess Mr.
17 Jeffery is the pilot.

18 THE CHAIRMAN: Fortunately I have never
19 had to use one in action.

20 MR. ISKRA: During this project one went
21 off in the area and we had a lot phone calls about
22 trying to trace it down. They felt it was coming from
23 our operations and, in fact, it was a local tourist
24 outfitter. So that's how we learn about them.

25 Both herbicide and insecticide projects

1 operate under specific weather parameters. This is
2 photo 3.9.1 and it is a Stevenson screen containing
3 meteorological instruments which measure wind speed,
4 temperature and relative humidity. This one is located
5 on the actual airstrip.

6 In the spray block there is generally use
7 of hand-held instruments to measure temperature and
8 relative humidity. For wind measurements, because the
9 ideal measurement is up in the canopy, it is a visual
10 estimate based on the trembling aspen moving. It is
11 something that we go over watching our wind speed
12 indicator and the trees nearby to get ourselves a feel
13 for what the winds are like.

14 Also, a pointer aircraft navigator, or in
15 fact a spray pilot, can see the wind action on the
16 lakes as he is going by to determine what the wind
17 strength is.

18 This is photo 3.10.2 and it is a nozzle
19 or a rotary atomizer on an insecticide project located
20 on the spray aircraft. It is an example of the
21 technology that Mr. Nicholson mentioned earlier used
22 for insecticide applications.

23 BT is a stomach poison insecticide which
24 means it must be ingested by the worm to take effect.
25 So the more opportunity the pest has to eat it, eat the

1 insecticide; the greater number of droplets you have,
2 then the better chance of the insecticide working on
3 the pest.

4 And this atomizer, how it works is the
5 movement of the aircraft turns these free-wheeling fan
6 blades which are adjustable so they adjust the
7 rotations per minute of that wire cage or basket and
8 the pesticide then is emitted and once it strikes that
9 rotating cage it breaks up into very fine droplets.
10 The cage will rotate, oh, anywhere from 6- to 10,000
11 rotations per minute. So it really spins.

12 This is photo 3.10.3 of a standard boom
13 and nozzle operation and that is the boom and these are
14 the nozzles right here. (indicating) They are
15 positioned -- the nozzles are positioned strategically
16 to take advantage of the aerodynamics, if you will, of
17 the aircraft, usually positioned up to three quarters
18 of the length of the wing span. They are angled at a
19 particular angle to come up with a specific spray
20 droplet for wind shear and they are positioned. They
21 are usually more on one side than another, and that is
22 for measuring the spray pattern.

23 We have got some interesting technology,
24 it is called a string analyser that Mr. Nicholson is
25 much more familiar with, and this feeds into a computer

1 once the aircraft makes a pass over an experimental --
2 just to try and get the swath width down. This
3 computer then reads the number of droplets and comes up
4 with a pattern so a pilot can see where his gaps are in
5 his swaths.

6 So it is not necessarily in the centre of
7 his swath he will have the greatest deposition and
8 tapering off. There might be a little hole somewhere
9 and he will position his nozzles or shut them off and
10 on, so in fact the pattern becomes much more even as
11 opposed to having little gaps in it.

12 This is photo 3.10.4...

13 MS. MURPHY: Just for the time being, if
14 you would just stay back of the mike a little bit.
15 Maybe we will take a minute and find out how to fix
16 that.

17 MR. ISKRA: Well, I can keep going. It
18 wasn't my microphone doing that.

19 As I said earlier, this is photo 3.10.4
20 doing the calibration exercise. The reason for
21 calibrating an aircraft is to deliver a prescribed
22 volume of pesticide over the treatment area and it's
23 ensuring that there is compliance with the pesticide
24 label.

25 This is achieved by spraying a known

1 volume of liquid, usually water, over a given time and
2 it is measured with a stop watch. The items that
3 control the amount of pesticide emitted would be a boom
4 pressure, which is controlled in the cockpit, also
5 number of nozzles or atomizers.

6 Another method of ensuring your
7 calibration is okay is by comparing the area sprayed
8 with the amount of pesticide that the aircraft has been
9 given.

10 This is photo 4.3.3 showing the meter
11 operation. In addition to the calibration, the amount
12 of pesticide delivered to an aircraft is metered. The
13 way this machines works, the bottom row numbers are
14 entered and that is the desired amount of pesticide.
15 In this particular case, the bottom row originally
16 started with 900, as the valves were turned on and the
17 pesticide was pumped into the aircraft, this number
18 would count down from 900 to 0. This number would be
19 what is in the aircraft and it would count up to 900.

20 There is a handle on the right-hand side
21 which, in order to activate the meter, to start the
22 pumping process, that has to be engaged and as the
23 meter counts down, in the last 30 meters it will slow
24 down on its own, and at 900 it would shut off
25 automatically. So there is no shutting off of the pump

1 or extra handles. There is usually a person on this
2 meter and there is usually one right at the aircraft
3 just ensuring the shut off.

4 This is photo 4.3.6 and it demonstrates
5 the use of the drybreak system right onto an aircraft.
6 The buckeye part of the drybreak is screwed into the
7 aircraft. Most aircraft have an additional handle as
8 well, an on/off handle. In addition to that there is a
9 backflow device in the hopper itself.

10 The mixing/loading technician here, some
11 of the safety equipment they are required to wear. The
12 important ones being eye glasses, particularly for the
13 dust; ear defenders for the noise of the aircraft, when
14 the aircraft are fully loaded and they are taking off
15 under maximum power and manoeuvring around there;
16 disposable coveralls; generally neoprene gloves. These
17 are a plastic, almost a seee-through type of glove
18 here; rubber boots.

19 There is a couple of pamphlets produced
20 by Ministry of Environment and Environment Canada,
21 fairly good ones, about dealing and handling
22 pesticides, the safety aspects of pesticides. They
23 apply to all use of pesticides.

24 In there are tips where to wear your
25 sleeves over your gloves as opposed to gloves over top

1 of your sleeves, things like that.

2 This is photo 3.11.1. At the top of the
3 photo is an emergency dump shower which is required
4 under the Ontario Health and Safety Act. From that
5 dump shower we have tapped in some washing facilities.
6 So the technician there has a clean-up area and that is
7 located right on the mix site. This is used for
8 herbicide projects as well.

9 In our particular project this has very
10 cold water and we are next to a building with hot
11 showers and, if an accident happened there, I think all
12 of us would rather take the warm shower.

13 On ground spray operations you would have
14 a landing or an area where the pesticide may be loaded.
15 This is where an accident will be likely to happen, if
16 one does. Normally, in that case, you would have a
17 pumping system from a lake or a pond which has a
18 charged hose. That may be continually running, that
19 pump, or it may be water charged, which all you have to
20 do is disengage the strangler which closes off that
21 hose and then you would get an instant shower.

22 All these mix load sites are inspected by
23 the safety officer and they would -- they have a
24 checklist to work from and they give us recommendations
25 if anything is warranted. This one was taken prior to

1 our audit and the regional audit safety officer came in
2 and advised us that we should have a shower curtain
3 around the edge of it for modesty.

4 This is photo 3.11.4 of an emergency eye
5 wash station. This is rather an elaborate one and we
6 borrowed that off of a bugs program years earlier. And
7 it's something that is there, it's required by the
8 Occupational Health and Safety Act but it's not as
9 practical we find as the hand-held eye wash bottles,
10 and this is a small plastic squeezable bottle and it
11 has an eye cup on it.

12 That we can use because it is very handy,
13 you can have it right beside where you are doing
14 rinsings, right beside the meter where you are coming
15 up to your aircraft and you have dust. In ground
16 spraying, a skidder operator can have it right in the
17 machine. And the biggest use is the sweat and dust,
18 wearing that equipment generally in the hot weather
19 working around the site.

20 This is photo 3.12.2 and it's a flow
21 chart in the event of an aircraft accident or incident.
22 This one was posted directly in the radio room and all
23 these flow charts and motor vehicle accidents, spills,
24 they are all appended and included as part of any
25 safety plan for herbicides and insecticides.

1 In this particular case, we had an extra
2 handy. I was the project supervisor and I was part of
3 the emergency response. So in the event of an
4 emergency, I would somehow need to relay information to
5 a central location where we could enact this procedure
6 and notify the authorities, ambulance, police right
7 away.

8 This is photo 3.13.1 and at the gate to
9 our airstrip we had a map posted identifying the blocks
10 sprayed to date. The communications officer ensured
11 that the district office and all persons wishing to be
12 notified and advised of the progress of operations, he
13 made sure that they were notified.

14 This is photo 4.3.1. The application
15 boss here has a headset radio system where he is at the
16 mix load site with the aircraft and the noise
17 associated with the aircraft, he is communicating load
18 information to the base which is just the trailer in
19 this particular case. In a small project that base
20 could even be the district office or often a half-ton
21 truck away from the centre.

22 In addition to this type of
23 communications here, there is communication -- radio
24 communication between aircraft and block security which
25 is a requirement under Ministry policies, block

1 security to the base. The application boss talks to
2 the base as well and the aircraft can reach the base
3 once they get close enough.

4 Now, we are moving on to operations.
5 This is photo 4.3.10 and I included this one to
6 demonstrate some of the potential problems and the
7 importance of weather information.

8 This is fog and it happens generally when
9 you have rain weather followed by bright clear skies
10 and it forms shortly after dawn. So although your
11 weather parameters may be acceptable for aerial
12 spraying, you have to be aware that this could happen.
13 Block security can report it and certainly the aircraft
14 can as well.

15 This is photo 4.3.11. This is an
16 insecticide project from a navigator's point of view.
17 The aircraft on the left here (indicating) is a pointer
18 aircraft and behind him flying at tree top level are
19 the three spray aircraft here. (indicating)

20 The pointer flies at about 500 feet above
21 the canopy and the pointer is familiar with the area
22 and he identifies the features and he in fact flies a
23 particular flight line.

24 The aircraft behind him are lined up,
25 they are a particular distance apart and they are kept

1 that way by the pointer or the navigator who can see
2 out of the back of the plane and lines them up and he
3 can call booms on and off.

4 For budworm projects it becomes easier to
5 distinguish your boundaries and no-spray areas once you
6 fly the blocks in advance.

7 Also, poplar stands in the springtime are
8 highlighted by the lime green colour, so stand
9 boundaries now that normally would not be very
10 distinguishable in the summer, once you are up there,
11 the navigator has a good feel for the area and can save
12 chemical and save area by, instead of having to shut
13 off after a particular swath, may be able to shut off
14 the aircraft earlier.

15 In the background here, just a note.
16 This whole brown area is a 375,000-acre burn in 1980
17 that happened just adjacent to the budworm spray block
18 but the spray block -- this spray operation took place
19 in 1987.

20 This is photo 4.3.14 of an actual
21 herbicide operation -- an aerial view of an actual
22 herbicide operation. This aircraft begins here
23 (indicating) and he's spraying along this particular
24 pattern. The road is the end of the block. So there
25 is no pointer aircraft. In this case here he has

1 aerial photographs and he's able to identify the block
2 from there. But this is actually a sequence of events
3 here.

4 In this project here the application rate
5 would be about 35 litres per hectare as opposed to 1.6
6 litres in the insecticide and that 35 litres is a total
7 mix.

8 This is the following photo, 4.3.15,
9 continuing along this path here (indicating) Prior
10 to the spray operations, the spray pilot may be
11 required to do a aerial reconnaissance of the spray
12 block, that is written into our tender documents. As
13 well, we would contract or use one of our aircraft and
14 take all the pilots together and view the sites prior
15 to the operations, identify areas of concerns, buffer
16 zones, where the flight lines will be, where the block
17 security will be on each of these blocks.

18 This is photo 4.3.16. The spray craft
19 here (indicating) has gone to the edge of the block and
20 has shut his booms off here (indicating) and he's
21 making a keyhole loop, turning around, and he's going
22 to do another pass in this particular area.

23 Just to mention -- that I mentioned
24 buffer zones earlier, if we were to use a buffer zone
25 as an example, this here was an area of concern

1 (indicating), this stand of timber along the edge would
2 be considered the buffer zone and the aircraft would go
3 parallel to the buffer zone in this particular
4 operation.

5 Maybe at this time Mr. Nicholson can give
6 us a bit of an update on more information on buffer
7 zones.

8 MR. NICHOLSON: Can we go to the next
9 slide, Ed. Maybe it may be a little more
10 demonstrative.

11 A couple of things here on buffer zones.
12 As Ed has mentioned, in this sequence of slides,
13 starting off with the insecticide spraying with the
14 lead aircraft information, you could see some lakes in
15 the background. Ed had mentioned the burn five or six
16 years previous.

17 You can contrast that sort of contiguous
18 canopy where your lead aircraft is providing some sort
19 of level of guidance to the spray pilots across the
20 blocks, you can contrast that to this herbicide
21 program. This is probably a very typical cut-over
22 situation. We are dealing with a fairly small,
23 discreet area. Our estimates are maybe this is
24 somewhere 12, 15 hectares. In this sequence of slides
25 that Ed has shown each pass would cover about 20

1 metres.

2 Using Ed's analogy or his comment about
3 the standing timber on the right being a buffer zone,
4 if there was an area of concern, a lake, a camp site,
5 whatever off the screen to the right of this slide,
6 this standing timber would then be considered as the
7 buffer zone.

8 Now, we have given a definition in Volume
9 I, page 331, is a listing of the buffer zones that we
10 use. The important thing in this slide, with any
11 application of buffer zones, is the purpose of the
12 buffer zones.

13 The buffer zone is there, it may be a
14 natural feature such as this standing timber, it may be
15 an artificially contrived boundary put in for
16 protection reasons. Its purpose is to minimize deposit
17 into the area we refer to as the no-spray zone.

18 There are a variety of -- there are three
19 or four numerical parameters that we use in determining
20 those buffer zones and that is part of the planning
21 process. All of those buffer zones would be indicated
22 on all the maps and photos and that information is
23 given to the pilots with the maps and photos as part of
24 the reconnaissance and then during the actual
25 application.

1 There is no direct application over the
2 buffer zones. Their sole purpose is to try, in an
3 effort, to minimize the movement of any spray into a
4 no-spray area.

5 MR. ISKRA: Just a couple of technical
6 details to add to what Mr. Nicholson said.

7 This sequence here would probably take
8 place within a period of about 20 seconds. It would
9 take about 12 seconds for the deposit to come right
10 down and in this particular sequence what you see has
11 been treated. Those two passes amount to about three
12 hectares.

13 This is photo 4.3.19. In the 1987
14 budworm program, both Kenora and Dryden Districts had
15 safety concerns regarding low-flying aircraft near
16 well-travelled highways and secondary roads. So after
17 consulting with the MTC and OPP, instead of the OPP
18 closing off the highway because we weren't spraying
19 directly adjacent to the highway, they -- it was
20 mutually agreed to come up with some large signs in
21 order to warn motorists of low-flying aircraft in case
22 they should get startled by a biplane flying by the
23 trees.

24 It is not atypical of any spray project.
25 It was a situation unique to two particular districts.

1 This is photo 5.2.1. And after spray
2 operations, the sprayed area is mapped with information
3 such as the date, whether it was sprayed in the
4 morning, a.m. or p.m., there is also a host of other
5 records, load records, time of the aircraft, pointer
6 would keep records on the actual time arrived on the
7 block, description of the spray action, those types of
8 items.

9 In addition, on this map here they would
10 identify the spray team and the calculation of the area
11 where the application boss can now compare the volume
12 emitted with what was delivered to the aircraft. And
13 we would like to be within five per cent and that is
14 the purpose of the calibration.

15 That is the end of the slide
16 presentation.

17 MS. MURPHY: Q. And just for the
18 purposes of the record, the list of our record, the
19 list of --

20 (feedback from sound system)

21 Let me try this one more time.

22 (adjusting volume on sound system)

23 The list of all of the types of records
24 that were kept is found on page 396 of this document, I
25 believe that is Exhibit 603B. That is the statement of

1 evidence for Panel 13.

2 So the list of the types of records is at
3 page 396 and examples of all the different kinds of
4 records are also found in the document. Is that
5 correct?

6 MR. ISKRA: A. Yes.

7 Q. Now, I understand you had a few
8 points, Mr. Iskra, you wanted to make about ground
9 applications.

10 A. That's right. The ground spraying
11 legislation is basically the same as for aerial
12 spraying. The important thing to note is, under the
13 Pesticides Act one person supervises three pieces of
14 equipment and there has to be one licensed
15 exterminator.

16 In the planning -- the planning is
17 completed through the annual work schedule process and
18 the public can inspect post-ground spray blocks through
19 that process.

20 Additional things that may be done in
21 communications would be public notification for areas
22 adjacent to human habitation. We would do that fairly
23 often, just visiting the people to let them know what
24 is happening, why the truck is here, and what we are up
25 to. The 30-day and 7-day immediate notices are not

1 required, however, the area is still posted under MNR
2 policies and procedures.

3 For security, there is someone on site --
4 on the spray site all the time, of course, the skidder
5 operator and the foreman or mix loader.

6 Other types of security I guess would be
7 locking of vehicles. All the equipment would be stored
8 in a half-ton which would be, I would say, the base of
9 operations.

10 The navigation maps and photos of the
11 block, if there is any chance of the skidder operator
12 going outside the cut-over or into another plantation
13 that doesn't require treatment, this would be flagged
14 off.

15 As far as weather, the weather parameters
16 are certainly less restrictive because the technology
17 is application on the ground.

18 A quick description of operations. I
19 believe the Board saw a video in Panel 11. It's a
20 two-man operation, very portable, very mobile. The
21 amount of pesticide that could be used in one day at
22 maximum production would likely be less than one drum.
23 Very -- fairly low production compared to aerial
24 application.

25 Calibration, just like the farm tractor.

1 A constant speed and constant speed compared to volume
2 emitted. There is a couple of things that you may have
3 seen in the video, use of a radar gun to measure that
4 speed in case it isn't constant or a wheel rub type
5 mechanism that is commonly used on farm tractors as
6 well that feeds information to a computer, if you will,
7 and that controls the amount of pesticide delivered.

8 We follow the Occupational Health and
9 Safety Act. In addition to the normal hazards
10 associated with spray operations, we have the logging
11 hazards on site as well with trees and there has to be
12 a distance that the mix/load person would maintain
13 away -- safe distance away from the skidder.

14 I mentioned the deluge shower, what we do
15 in those types of conditions and the eye wash stations
16 would be normally a held-hand operation.

17 I guess that pretty well covers it.

18 Q. Mr. Iskra, I understand that you are
19 actually a timber technician; is that right?

20 A. Yes, that's correct.

21 Q. And you have been in -- you are in
22 Dryden District?

23 A. Yes.

24 Q. And how long have you been there?

25 A. Oh, I guess since about 1973.

1 Q. Okay. Is part of your normal duties,
2 are you involved in the kinds of operations that you
3 have been talking about here fairly regularly?

4 A. Well, regularly, yes. What I mean by
5 regularly is once a year, unless there is an
6 insecticide project. It's not the major part of my
7 job. It actually only takes place within a three or
8 four-week period with maybe a little more involved in
9 the planning aspects of it. My job is structured
10 around silviculture activities.

11 So in the spring I'm committed to tree
12 planting, organization, auditing; toward the summer
13 more for site preparation, scarification; towards the
14 fall it would be herbicide work, also all types of
15 thinning, tending, including ground manual; toward the
16 fall would be the preparation of the annual work
17 schedule, walking all the cut-overs, assisting the
18 forester in that preparation.

19 In the winter there would be aerial
20 seeding or possibly winter scarification. By the end
21 of the winter there would be a lot of the paperwork
22 that we procrastinated on all of the wonderful days in
23 the summer that would be done for about two weeks.

24 But the job -- there is so many other
25 parts of the job that can happen year round, cut

1 inspections is the major part of the job, cut layout,
2 recut inspections that happened throughout, scaling.

3 On a day like today I would be doing
4 aerial photography. Any clear day we are up doing
5 aerial photography, monitoring cut boundaries,
6 scarified areas, so on and so forth. So there is a
7 host of other things that can be interrupted by fire
8 every second year or so or protection levelling.

9 Q. And I understand that in closing you
10 wanted to bring us back to some main messages, Mr.
11 Nicholson?

12 MR. NICHOLSON: A. That's correct.

13 If anything, Ed and I would like to leave
14 the Board and my colleagues here in the audience with
15 these final thoughts, if you will.

16 Obviously, by virtue of what we have gone
17 through here or presented here in the last couple of
18 days these programs are well planned. There will be
19 more information provided in Panel 15 on the planning
20 process.

21 We have described the development over
22 the last decade of the MNR policies, the directives,
23 the manuals, the guidelines, indicating that this has
24 been an evolving process as we take information from
25 end users and incorporate it back into our manner of

1 conducting business; things like the review committees,
2 using those opportunities for planning as well; all of
3 the plans being put together in a project description
4 which becomes the final public document.

5 As Ed has indicated with the maps and the
6 photos, part of that planning includes a great deal of
7 record-keeping, everything from pointer reports and
8 navigator reports, weather records, load records, right
9 through to and including the final summations, the
10 pesticide usage reports.

11 We conduct these activities in as safe a
12 manner as possible. They are as well regulated by the
13 Pest Control Products Act, the Ontario Pesticides Act.
14 All of the businesses conducting these operations are
15 licensed as operators under the Act. All of the pilots
16 doing the actual spraying, they are licensed as
17 exterminators or applicators.

18 We go beyond that in our own operations
19 in that on each and every project some of our own
20 staff - when I say our own, Natural Resources - would
21 also be licensed as exterminators. This is in excess
22 of the minimum requirements of the Act.

23 We spent a lot of time and effort in
24 ensuring that these people are trained and examined and
25 that these programs operate as safely and as

1 efficiently as possible.

2 The term we like to use is high degree of
3 operational control, and that is predominantly what
4 comes through in the incorporation of the district
5 operating plans, communications, security. There is
6 lots of guidelines and manuals and directives that we
7 give. When it comes time for the actual execution of
8 the programs, they are very well run, very well
9 regimented. As I said the word we like to use is high
10 degree of operational control.

11 There is still a lot of flexibility
12 involved in these programs, they are adaptable to local
13 needs and responsive. There are some differences, as
14 Ed has shown, between insecticide and herbicide
15 programs. The technical content, if you will, still
16 remains the same.

17 We try to maintain this flexibility, but
18 still some sort of rigid execution -- rigid planning
19 process through in there by using the manuals and
20 guidelines that we mentioned.

21 Adherence to the four critical pieces of
22 legislation, plus all the directives that MNR has
23 imposed upon ourselves above and beyond that; meeting
24 with other groups to establish buffer zones such as we
25 did with Ministry of Environment to establish something

1 that we would consider as minimums and then we would
2 go, as I said, perhaps above and beyond those minimums
3 to meet our own requirements.

4 I feel quite comfortable that these
5 operations are well run. We take the information that
6 is provided as a learning experience through these
7 programs, take that information, turn it around and
8 provide it to the program managers for further plans
9 and, more importantly, it's provided to the public and
10 our own staff so that everybody involved has the
11 opportunity for input and, more importantly, has a good
12 understanding of how critical these programs are to
13 forest managers and how critical it is that we, as end
14 users, have this technology and have these programs,
15 how critical it is that we understand what we are doing
16 and that everybody is aware of the manner in which we
17 are conducting these programs.

18 MS. MURPHY: Thank you, very much.
19 That's our evidence-in-chief.

20 THE CHAIRMAN: Thank you.

21 Ms. Cronk? Shall we have the morning
22 break at this point and have you continue right after?

23 MS. CRONK: Thank you, Mr. Chairman.

24 THE CHAIRMAN: 20 minutes.

25 ---Recess taken at 10:15 a.m.

1 ---On resuming at 10:45 a.m.

2 THE CHAIRMAN: Thank you. Be seated,
3 please.

4 MR. MARTEL: That's all yours?

5 MS. CRONK: I would like to tell you it
6 all related to roads, but it doesn't.

7 Mr. Chairman, at the outset I would like
8 to file some additional interrogatory responses that I
9 will be discussing with a number of the witnessess on
10 this panel.

11 The first has been put together as a
12 bundle. It is OFIA/OLMA responses to Questions
13 numbered 2, 5, 14, 15 - stopping there, I recognize
14 that's been separately filed this morning, but this
15 package was put together over the weekend so it will be
16 duplicated - 17, 19, 21 and 22.

17 Those are all OFIA/OLMA, together with
18 OFAH No. 7 all in respect of Panel 12.

19 THE CHAIRMAN: Okay. That will be
20 Exhibit 649.

21 Are these separate or are these all in
22 one package?

23 MS. CRONK: It is all in one. (handed)

24 THE CHAIRMAN: Thank you.

1 ---EXHIBIT NO. 649: MNR interrogatory responses to
2 OFIA/OLMA Question Nos. 2, 5, 14,
3 15, 17, 19, 21 and 22; OFAH
4 Question No. 7 (Panel 12).

5 MS. CRONK: That was Exhibit 649, sir?

6 THE CHAIRMAN: That's correct.

7 MS. CRONK: Thank you. And similarly in
8 respect of Panel 13, I would like to file a package of
9 interrogatory responses, OFIA/OLMA Question No. 3,
10 Question Nos. 11, 12, 28 and 29, and again 28 is also
11 now part of Exhibit 648.

12 MR. FREIDIN: Can you just repeat the
13 numbers again?

14 MS. CRONK: Yes, No. 3, 11, 12, 28 and
15 29.

16 THE CHAIRMAN: Exhibit 650.

17 MS. CRONK: (handed)

18 THE CHAIRMAN: Thank you.

19 ---EXHIBIT NO. 650: MNR interrogatory responses to
20 OFIA/OLMA Question Nos. 3, 11, 12,
21 28 and 29.

22 MS. CRONK: I should advise, Mr.
23 Chairman, as well, that we attempted before returning
24 to Thunder Bay last evening to provide Mr. Mander with
25 a list of the likely exhibits that would be referred
to. There was one that was neglected to be added to
the list. I won't be using it for some time, but it

1 might in due course be convenient for you to have
2 Exhibit 513. I am sorry, that is one the FMA
3 agreements that has been filed as an exhibit before the
4 Board.

5 THE CHAIRMAN: That was 513?

6 MS. CRONK: Yes.

7 CROSS-EXAMINATION BY MS. CRONK:

8 Q. Gentlemen, I have a number of --
9 sorry, gentlemen and lady, I have a number of questions
10 relating in the first instance to the tending evidence
11 that has been given, and I recognize that in many
12 respects the evidence that a number of you have given
13 overlaps on that issue. So in many cases, if I put the
14 question to one individual and any of you feel it more
15 appropriate that you answer it, please feel free to
16 indicate.

17 But at the outset may I put the questions
18 to Mr. Hynard. As you began this panel with that
19 subject, perhaps I can begin the cross-examination that
20 way.

21 I would like to explore with you briefly,
22 Mr. Hynard, some of the evidence that you have given
23 with respect to the need for tending generally in the
24 area of the undertaking.

25 You have told the Board in your evidence,

1 Mr. Hynard, as I understand it, that tending is in your
2 opinion an inseparable part or component of the
3 silvicultural system and you suggested, as my notes
4 record it, that silvicultural treatments come in
5 packages. Do I have that correctly?

6 MR. HYNARD: A. Yes, you do.

7 Q. All right. Would you agree with me,
8 Mr. Hynard, in light of that conceptual starting point,
9 if I can put it that way, that the need for tending is
10 fundamentally related to the objective of achieving
11 regeneration goals?

12 A. Fundamentally, yes.

13 Q. The two are integrally tied up; are
14 they not?

15 A. Yes, they are.

16 Q. All right. And is it appropriate, in
17 your view, based on your -- obviously your professional
18 experience and your judgment, to suggest that tending
19 is really directed in the main to two things: The
20 first being competition suppression; and the second
21 being competition prevention.

22 Is that a fair suggestion to make?

23 A. Competition -- I'm sorry, could you
24 give me the whole question again, please, Ms. Cronk?

25 Q. Yes. I am inquiring of you whether

1 it would be fair to suggest that tending in the main is
2 directed to two things, whatever form of tending it may
3 be: First, competition suppression; and, secondly,
4 competition prevention in no particular order of
5 priority?

6 A. Oh, yes. Yes, I agree.

7 Q. So what we have then - and you will
8 forgive me, but as a lay person I like to start when I
9 can with basic concepts - what we have them, if I have
10 it correctly, three basic inter-relationships. First,
11 that tending is fundamental to regeneration
12 achievement; and, secondly that it is competition
13 driven or competition oriented; okay?

14 A. Yes, both of those are quite correct.

15 Q. All right. Is there, in your
16 experience, a correlation between the amount of tending
17 undertaken and the degree of regeneration success
18 achieved in general terms?

19 A. I would expect there to be a
20 relationship there, yes.

21 Q. All right. And what would be the
22 nature of that relationship?

23 A. It would be a direct one; that is,
24 that there would be a relationship between the amount
25 of tending performed and the success rate of renewal

1 efforts. A higher degree of tending would result in
2 higher regeneration success. I believe that there
3 would be such a relationship.

4 THE CHAIRMAN: But wouldn't that depend,
5 Mr. Hynard, on the type of regeneration you had
6 concentrated on, such as natural or artificial?

7 MR. HYNARD: There would be specifics,
8 Mr. Chairman, that would affect the universal nature of
9 that statement, but whether the regeneration resulted
10 from artificial efforts or from natural methods, if it
11 were being out-competed by other vegetation, then
12 failure to control that competing vegetation would
13 result in lower success rates of that regeneration.

14 So I would say that it would really be a
15 function of the crop trees and their need for tending
16 and the degree of competition, not whether the renewal
17 efforts were artificial or natural. But there are
18 site-specific differences that would affect the total
19 universality of that statement.

20 MS. CRONK: Q. As a general proposition,
21 would you agree that the greater the degree of tending
22 undertaken - whether the initial regeneration is
23 induced by man or naturally caused - the greater the
24 degree of tending, the higher your expectation would be
25 of greater regeneration success?

1 MR. HYNARD: A. I would expect there to
2 be that relationship, yes. And the reason I say that
3 is that one of the main uses of tending in Ontario is
4 early tending to free newly regenerating stands from
5 competing vegetation to ensure the survival or success
6 of that young stand. And so, yes, of course I would
7 expect that relationship to be there.

8 Q. And I recognize, Mr. Hynard, that you
9 gave your evidence primarily with respect to mechanical
10 and manual tending. My recollection is that a number
11 of people dealt with chemical tending.

12 Mr. Galloway, am I right that you spoke
13 to that issue?

14 MR. GALLOWAY: A. Yes, that's correct.

15 Q. All right. In the context of
16 chemical tending, based on your experience, is there in
17 your view a correlation between the amount of tending
18 undertaken and the degree of regeneration success
19 achieved?

20 A. Yes, it would be the same, just as
21 Mr. Hynard said.

22 Q. All right. Could I ask you, Mr.
23 Hynard to go to -- do you have Exhibit 28 with you,
24 that's the 1985 Provincial Auditor's Report or manual?

25 MR. HYNARD: A. Yes, I do.

1 Q. Thank you.

2 MS. CRONK: Do you have that, Mr.

3 Chairman?

4 THE CHAIRMAN: Yes.

5 MS. CRONK: Q. Could I ask you, Mr.

6 Hynard, if you would please, to go to the section of
7 that report dealing with tending which begins on page
8 11.

9 MR. HYNARD: A. I have the page.

10 Q. I direct your attention to the first
11 paragraph of the Provincial Auditor's Report which, if
12 you will permit me, reads:

13 "After being planted new seedlings must
14 compete with other vegetation such as
15 weeds and scrub brush. Often if left
16 uncontrolled, this other vegetation may
17 crowd out or significantly inhibit the
18 growth of the seedlings. The Ministry
19 recognizes the consequences of this as
20 evidenced by their policy stating that
21 appropriate tending practices should be
22 carried out where competing vegetation
23 will delay or prevent successful
24 regeneration of the site."

25 Stopping there for a moment, Mr. Hynard.

1 In light of the answers that you have given me already
2 this morning, I suspect you have no disagreement with
3 that paragraph?

4 A. I have no disagreement whatsoever.

5 Q. Then leading on to the next
6 paragraph, it is suggested; is it not, that the most
7 economical method of tending is aerial spraying of
8 herbicides which kills off competing vegetation yet
9 leaves seedlings undamaged.

10 Do you agree, Mr. Hynard, with that
11 statement?

12 A. Yes, I do.

13 Q. Mr. Galloway, do you?

14 MR. GALLOWAY: A. Yes, I do.

15 Q. All right. And could I ask you then
16 to go to the sixth paragraph beginning with the words
17 "In comparing..."

18 Do you see that? And I direct your
19 attention to the -- in particular to the last sentence
20 of that paragraph and the paragraph deals with, Mr.
21 Hynard - take a moment to review it if you wish - it
22 deals with the level of tending that as at the date of
23 this report in 1985 had been undertaken by MNR in
24 comparison to its planned or projected tending goals,
25 and it goes on to suggest in the last sentence:

1 "There was a correlation between those
2 regions which did the most tending as
3 compared to their plans and the
4 percentage of satisfactorily regenerated
5 areas in those regions."

6 Now, stopping there. I take that really
7 to be corroboration, if you will, or at least
8 confirmation from a different source of the kind of
9 correlation that you agreed with me a few moments ago
10 exists?

11 MR. HYNARD: A. Yes, it certainly
12 appears to be.

13 Q. All right. And then I would ask you
14 to go, if you would, to the last two paragraphs on the
15 page beginning with the second from last dealing with
16 cost effectiveness.

17 It is suggested there by the Provincial
18 Auditor; is it not, that from a cost effectiveness
19 point of view the average cost of planting trees,
20 including the growing of seedlings and site
21 preparation, was in excess of \$360 an acre?

22 A. Would I agree that that's the correct
23 amount?

24 Q. No, that --

25 A. Sorry?

1 Q. If you could give me this much so
2 far, that that's what it says?

3 A. That's what it says, yes. It says
4 exactly that.

5 Q. And on a comparative basis the
6 Provincial Auditor then goes on to suggest that the
7 comparable costs of tending planted areas using aerial
8 seeding was only approximately \$19 per acre?

9 A. Aerially spraying. Yes, that's what
10 it says.

11 Q. All right. And that, the Provincial
12 Auditor suggests, is the equivalent of about 5 per cent
13 of the cost of the original investment?

14 A. Yes, 5 per cent. It says 5 per cent.

15 Q. All right. Would you agree with me,
16 Mr. Hynard, that it appears the Provincial Auditor is
17 suggesting that given the cost of tending, as then
18 applied, it was a relatively inexpensive measure
19 compared to the worth of its being undertaken?

20 A. Oh, yes, I agree that that's
21 certainly the sense that I have from this report.

22 Q. All right. And --

23 THE CHAIRMAN: Excuse me, Ms. Cronk.

24 MS. CRONK: Yes.

25 THE CHAIRMAN: Do you understand that

1 statement - or perhaps I could put this to Mr. Hynard -
2 to mean that it cost \$19 an acre but that doesn't
3 appear to include the cost of the original planting;
4 does it?

5 MR. HYNARD: No, no. What they are
6 saying in that report, I believe, Mr. Chairman, is that
7 tending is very, very important to the success of
8 renewal efforts.

9 Given the high cost of artificial
10 renewal, which is stated here in excess of \$360 an acre
11 and the relatively low cost of aerial spraying to tend
12 these areas is only \$19, that there is the opportunity
13 to protect that original investment which was so high
14 and ensure its success with a relatively little amount
15 of tending costs, only \$19 per acre. I believe that's
16 what the report is saying.

17 MS. CRONK: Q. Or to put it, if I could
18 suggest perhaps another way, Mr. Hynard: For an
19 incremental expenditure of 5 per cent of original
20 investment, is the Provincial Auditor not suggesting
21 that there is a high degree of protection to be
22 afforded to the original investment?

23 MR. HYNARD: A. Yes, I believe that's
24 exactly what he is suggesting.

25 Q. And looking then at the last

1 paragraph, could you take a moment and review that,
2 please.

3 A. Yes.

4 Q. Do you read that last paragraph, Mr.
5 Hynard, as being a recommendation from the Provincial
6 Auditor in 1985, at the time of the report, for
7 additional tending to be undertaken?

8 A. Yes, in my mind that's exactly what
9 he is recommending.

10 Q. Would you agree with me that it is as
11 well, given the language used -- well, really this
12 entire page and discussion of tending is as well an
13 acknowledgement by the Provincial Auditor of the
14 importance of tending to the protection of regeneration
15 investments?

16 A. Yes, it is.

17 Q. Mr. Galloway, is there anything
18 contained on that page with respect to the Provincial
19 Auditor's discussion of tending that I have put to Mr.
20 Hynard with which you disagree or to which you wish to
21 add anything?

22 MR. GALLOWAY: A. No, I agree with Mr.
23 Hynard's comments. And in fact in the written
24 evidence, page 169, we had parts of the same quotes.

25 Q. Well, I confess I had missed or

1 forgotten that and I thank you for pointing it out.

2 MR. HYNARD: A. The Ministry's response
3 to that audit statement is contained on page 38 of that
4 same report and the MNR response reads:

5 "We agree that tending is very important
6 to the success of our regeneration
7 efforts. The Ministry's concern with
8 the need for tending is reflected in the
9 new tending north and tending south
10 programs..."

11 And it goes on to acknowledge the
12 importance of tending to the success of regeneration.

13 Q. All right. I would like to come back
14 to the tending north and tending south programs in a
15 moment, Mr. Hynard. Thank you for pointing that out.

16 Mr. Hynard, are you familiar with the
17 work of a gentleman by the name of Professor John
18 Walstead connected with the University of -- Oregon
19 State University, the United States?

20 A. Only briefly.

21 Q. All right. Prior to the provision by
22 me through your counsel of an excerpt from a text by
23 that author, had you been familiar with his work?

24 A. No.

25 Q. All right. Mr. Galloway, are you

1 familiar with his work?

2 MR. GALLOWAY: A. Yes, I have a copy of
3 that book myself.

4 Q. All right. Are you familiar with Mr.
5 Walstead's field of endeavour? Can you confirm for me
6 that he is a recognized authority in forestry and
7 vegetation management in the United States?

8 A. Personally, other than the fact that
9 he has produced this book, that's my only familiarity
10 with him.

11 Q. Are you familiar with his textbook?

12 A. Yes.

13 Q. All right. Do you regard it as being
14 an authority on the subject matter of vegetation
15 management?

16 A. Yes, it definitely outlines all of
17 the concerns, problems and values.

18 Q. All right. Ms. Krishka, while we are
19 on the subject, are you familiar with that work and do
20 you regard it as being authoritative on the issue of
21 vegetation management?

22 MS. KRISHKA: A. Yes, I am familiar with
23 it and I agree that it is an authority on that subject.

24 Q. All right. I would like to provide
25 both of you with a copy of an extract from that text.

1 MS. CRONK: I would ask, Mr. Chairman, in
2 light of the evidence the witnesses have given that it
3 be marked as the next exhibit.

4 THE CHAIRMAN: Exhibit 651.

5 MS. CRONK: (handed)

6 THE CHAIRMAN: Thank you.

7 ---EXHIBIT NO. 651: Excerpt from a textbook authored
8 by Professor John Walstead, 1987.

9 MS. CRONK: Q. Mr. Galloway, perhaps we
10 could start with you. I confess that some months ago,
11 in attempting to learn what I could about this subject
12 matter generally, I made inquiries regarding the
13 leading or most recent textbook authority that might be
14 available on the subject of vegetation management and
15 it was suggested to me that this textbook written by
16 Professor Walstead and Mr. Peter Cooch was one of the
17 most recent, if not the most recent.

18 Can you confirm that for me, or do you
19 know?

20 MR. GALLOWAY: A. It is the most recent
21 one I have as well.

22 Q. All right. Is there in the Canadian
23 context a more recent or equally authoritative text of
24 which you are aware dealing specifically with the
25 subject of vegetation management?

1 A. No.

2 Q. All right. Is this then -- stands on
3 its own, if I could put it that way?

4 A. Yes, I believe so.

5 THE CHAIRMAN: Ms. Cronk, what is the
6 date of publication of this, do you know?

7 MS. CRONK: I am sorry, sir, is that page
8 missing? I believe it is 1987.

9 THE CHAIRMAN: Thank you.

10 MS. CRONK: Yes, it is, Mr. Chairman,
11 1987.

12 Q. Could I ask you to go then, Mr.
13 Galloway, if you would please, first to page 157 which
14 should be the first page in the extract that you have
15 after the title page. Do you have that?

16 MR. GALLOWAY: A. Yes, I do.

17 Q. All right. And am I correct that
18 that is the first page of a chapter that, by its title,
19 appears to deal with the consideration of vegetation
20 management alternatives?

21 A. Yes, that's correct.

22 Q. All right. Could I stop there for a
23 moment. What in your vernacular does the term
24 vegetation management mean?

25 A. Vegetation management to me means all

1 of the items we covered in the direct evidence in the
2 last few days; the cleaning, release options, pruning,
3 anything and everything that refers to controlling
4 competing vegetation.

5 Q. Ms. Krishka, do you agree or
6 disagree?

7 MS. KRISHKA: A. I believe I would
8 generally agree. I believe vegetation management can
9 involve vegetation management for timber production
10 purposes and also for other purposes.

11 Q. Could I direct you then first, Mr.
12 Galloway, to the discussion beginning at the bottom of
13 page 157 under Vegetation Management Practices and
14 continuing over on to the next page, 166, and I should
15 explain that in the text there is a table that subsumes
16 the pages in the middle.

17 And could you just take a moment and
18 review that for me and confirm that the authors suggest
19 that silvicultural vegetation management practices
20 include harvesting, site preparation, stand or
21 plantation release and timber stand improvement?

22 MR. GALLOWAY: A. Yes, that's correct.

23 Q. All right. Am I correct that in the
24 context of the evidence that you and your colleagues
25 have given that the latter two; namely, stand or

1 plantation release and timber stand improvement, would
2 fall within the category of tending?

3 A. Yes, that's correct.

4 Q. And with respect then, if I could, to
5 page 166 of the extract, I direct your attention to the
6 first full paragraph beginning with No. 1, you see in
7 the middle of the page?

8 A. Yes.

9 Q. Am I correct that the authors suggest
10 there that in that paragraph that vegetation control
11 improves the availability of site resources for the
12 benefit of desirable tree species and that that can
13 come about in a number of ways?

14 A. That's correct.

15 Q. Do you agree with that?

16 A. Yes.

17 Q. And am I also correct that the
18 authors placed some emphasis in that paragraph on both
19 the prevention of competition and, as well, the
20 suppression of competition?

21 A. That's correct.

22 Q. All right. And with respect to the
23 next paragraph, could you take a moment and look at it
24 and tell me if you agree with the suggestion made there
25 as well or disagree?

1 A. Yes, I would agree with that
2 paragraph.

3 Q. All right. And am I understanding it
4 correctly if I suggest that it is simply indicating
5 that the more resources that are available to be
6 dedicated to the reduction of competing vegetation, the
7 greater one might reasonably anticipate growth and
8 yield to be?

9 A. That's correct.

10 Q. All right. And finally in the third
11 paragraph - again take a moment to read it if you
12 wish - do you agree with the suggestion, Mr. Galloway,
13 that proper application of vegetation management
14 treatments can help to ensure the dominance of
15 commercially valuable timber species as suggested by
16 the authors?

17 A. Yes, I agree.

18 Q. All right. Ms. Krishka, do you agree
19 with the suggestions or disagree with the suggestions
20 contained in those three paragraphs?

21 MS. KRISHKA: A. I agree with them.

22 Q. Thank you. Now, Mr. Hynard, if I
23 could return briefly to you. You have given evidence
24 in some respects comparing manual tending treatments to
25 chemical tending treatments and you put certain

1 statistics and numbers before the Board in that regard.

2 And my notes indicated that you said
3 several times during the course of your evidence that
4 in 1986 and 1987, 80 per cent of the tending program
5 undertaken on Crown lands in that year was comprised of
6 cleaning treatments. Did I have that correctly?

7 MR. HYNARD: A. I don't recall the exact
8 figure, but that would be the order of magnitude, yes.

9 Q. Could I ask you to go, if you would
10 please, to Exhibit 609?

11 MS. CRONK: That, Mr. Chairman, is the --
12 I believe it was an overhead, a hard copy produced of
13 the pie graph or the pie chart relating to tending
14 treatments carried out on Crown land.

15 Q. Do you have the overhead handy, Mr.
16 Hynard? Perhaps we could put it up as --

17 MR. HYNARD: A. I'm sorry, I don't have
18 the overhead handy.

19 THE CHAIRMAN: We have a copy right here.
20 I am just seeing if there is another copy, but it
21 doesn't matter.

22 MS. CRONK: Okay, thank you.

23 Q. Mr. Hynard, we are looking for the
24 transcript reference with respect to my suggestion of
25 the 87 per cent, but you have confirmed for me that

1 that's in the correct order of magnitude, and bearing
2 that figure or a like figure in mind and looking at
3 Exhibit 609, if I wanted to determine what proportion
4 of the total tending -- sorry, let me try again.

5 If I wanted to determine what proportion
6 of the total cleaning portion of the tending program
7 was comprised of chemical cleaning, would I add the
8 chemical cleaning number for air, 55,649, together with
9 the chemical cleaning ground, 3,391?

10 MR. HYNARD: A. Yes, you would.

11 Q. All right.

12 A. Your earlier question, Ms. Cronk, was
13 on cleaning as a whole not just chemical cleaning?

14 Q. That's correct.

15 A. Yes.

16 Q. And I suggested to you that the
17 proportion of the tending program represented by
18 cleaning treatments was 87 per cent?

19 A. I believe you used the number 80,
20 but...

21 Q. All right. Well, you tell me what
22 you think it was and we will check the transcript, or
23 do you now recall?

24 A. No, I still don't recall the number,
25 but I could work out the arithmetic very easily at the

1 next break and have the number for you.

2 Q. Fine.

3 A. It is in that order of magnitude.

4 Q. Thank you. All right, bearing that
5 in mind then, as I have done the calculations with
6 respect to Exhibit 609, can you confirm for me that in
7 1986 and 1987, 13 per cent of the cleaning program was
8 done manually; whereas some 74 per cent of the cleaning
9 program was done using chemicals?

10 A. Yes, it would be that order of
11 magnitude and I am certainly prepared to accept your
12 arithmetic.

13 Q. Well, I am grateful for that, Mr.
14 Hynard, but I think it would be better if you checked.

15 A. Okay. Could you give me your number
16 again, please, Ms. Cronk?

17 Q. Yes, I suggested that of the total
18 cleaning program in 1986-87, 13 per cent of it was done
19 by manual means; whereas some 74 per cent was done
20 using chemicals according to the data provided in
21 Exhibit 609.

22 A. 13 per cent manual and 87 per cent
23 chemical -- sorry, is that what you said?

24 Q. I said 74 per cent chemical.

25 A. No, that's not the number I get.

1 Q. All right. Well, that's why we check
2 these things. Tell me how you got -- what you have
3 done and what the number is that you obtained?

4 A. Yes. The total amount of cleaning
5 done in that year, 1986-87, includes the amount of
6 chemical cleaning which was 55,649 hectares, plus the
7 amount of chemical cleaning done on the ground, 3,391
8 hectares, plus a small amount of mechanical cleaning,
9 239, plus the amount shown of manual tending which is
10 10,660.

11 And I took the proportion of chemical
12 cleaning, both aerial and ground, to that total and I
13 will just rework my arithmetic to confirm your number.

14 Q. Thank you.

15 MS. CRONK: I have to confess that when I
16 asked him to check I thought I was right, but I am glad
17 I asked him to check.

18 MR. HYNARD: I wouldn't doubt that you
19 are right. It could very well be my arithmetic.

20 THE CHAIRMAN: My mathematical career
21 ended in Grade 11 so I am going to leave it to all --

22 MS. CRONK: I didn't want to admit when
23 mine ended, so I am asking him to check.

24 MR. HYNARD: The amount that I have --
25 of the total amount of cleaning done in that year, 15

1 per cent was by manual methods and 84 per cent was by
2 chemical methods with the small amount of difference
3 being represented by the mechanical cleaning methods.

4 MS. CRONK: Q. All right. 15 per cent
5 versus 84 per cent?

6 MR. HYNARD: A. Yes.

7 Q. 15 per cent in manual, the latter 84
8 per cent in chemical?

9 A. Yes.

10 Q. Thank you very much. I take it then
11 in making -- or in doing those calculations, Mr.
12 Hynard, that the item 'other' is not included in the
13 base number?

14 A. That's right, it's not a cleaning
15 treatment.

16 Q. All right. And, similarly, the
17 number for thinning or improvement is not included in
18 the base number?

19 A. No, it was not included, nor was the
20 amount shown for pruning.

21 Q. So assuming that the 80 per cent
22 figure that I started with is approximately correct,
23 subject to checking the transcript, that means; does it
24 not, that of that entire program, 84 per cent of all of
25 the tending done in 1986-87 was done by chemical means

1 and 15 per cent was done by manual means?

2 A. No, not of that program, of that
3 particular treatment type.

4 Q. Yes, I'm sorry.

5 A. Namely cleaning.

6 Q. I'm sorry, yes.

7 A. Yes, that's right. That certainly
8 appears to be correct to me.

9 Q. All right. And could I ask you to go
10 now, if you would please, to Exhibit 618...

11 MS. CRONK: Which, Mr. Chairman, is a
12 series of interrogatory responses marked by either Mr.
13 Freidin or Ms. Murphy.

14 Q. Do you have that, Mr. Hynard?

15 MR. HYNARD: A. Yes, I do.

16 Q. All right. Mr. Hynard, could I ask
17 you to go to the second page, being the response to
18 Forests for Tomorrow Interrogatory No. 5.

19 Am I correct that the answer to
20 sub-paragraph (a) to that question sets out the extent
21 in hectares of the area treated on Crown lands with
22 herbicides for cleaning operations?

23 A. Yes, that is exactly what the figures
24 represent.

25 Q. All right. And that is through the

1 years 1980 to 1988.

2 A. That's right. 1980-81 to 1987-88.

3 Q. All right. And if you could hold
4 that to one side, if you would please, and go to
5 exhibit -- well, perhaps the easiest way to do this is
6 to go to the one that your counsel marked this morning,
7 OFIA Interrogatory No. 15.

8 A. Yes, I have that one.

9 THE CHAIRMAN: What number is that?

10 MR. CASSIDY: 648.

11 THE CHAIRMAN: Thank you.

12 MS. CRONK: Thank you.

13 MR. HYNARD: Mine is marked 649.

14 MS. CRONK: Q. Well, the reason for the
15 confusion, is it has been marked twice.

16 MR. HYNARD: A. I see.

17 Q. And it has been marked part of the
18 package and it's been marked separately.

19 A. 648 then.

20 Q. However you find it. Am I correct
21 that the answer to Question 15 -- OFIA 15 for Panel 12,
22 sets out the extent of the area treated manually by the
23 Ministry on Crown lands by manual cleaning methods in
24 the same time frame as was set out in response to
25 Forests for Tomorrow Interrogatory No. 5; that is, 1980

1 through 1988?

2 A. Yes, that is what those figures
3 represent.

4 Q. All right. So that if we were to
5 hold the two together and compare the chemical versus
6 manual, we would have the extent of area treated by
7 each method for cleaning purposes in those eight years?

8 A. Yes, we would.

9 Q. All right. Mr. Hynard, just to make
10 it easier for later reference, what we have done is
11 transposed the numbers from those two interrogatory
12 responses in a side by side fashion for comparative
13 purposes, and I would ask you to look at it, if you
14 will, and confirm after the break this morning that the
15 numbers have been accurately transposed?

16 MS. CRONK: And I would ask, sir, that
17 that be marked as the next exhibit.

18 THE CHAIRMAN: Exhibit 652.

19 MS. CRONK: (handed)

20 ---EXHIBIT NO. 652: Document representing comparison
21 between chemical cleaning
22 information from FFT Interrogatory
23 response No. 5, and manual
cleaning information from OFIA
Interrogatory response No. 15
prepared by OFIA.

24 MS. CRONK: Q. And just so that you are
25 clear, Mr. Hynard, on the left-hand side of the page we

1 have taken the chemical cleaning information from the
2 response to Forests for Tomorrow Interrogatory No. 5,
3 and on the right-hand side we have taken the manual
4 cleaning information from OFIA Interrogatory response
5 No. 15.

6 MR HYNARD: A. Yes, and I can confirm
7 that you have correctly transposed -- transferred those
8 figures.

9 Q. All right. I have a number of
10 questions with respect to this, Mr. Hynard.

11 On the response to Forests for Tomorrow
12 Interrogatory No. 5 relating to the extent of the area
13 on Crown lands treated with chemicals for cleaning
14 purposes, it is specifically indicated that the numbers
15 provided included some small area outside the area of
16 the undertaking and further included such treatments by
17 companies under FMAs.

18 Do you recall that?

19 A. Yes, I recall that.

20 Q. All right. Do you know, sir, whether
21 or not the same is true of the statistics provided with
22 respect to manual cleaning operations?

23 A. I believe that is also true.

24 Q. All right. So that we are looking
25 at -- we are comparing equivalent things or appropriate

1 things.

2 A. Apples and apples.

3 Q. Thank you. Can we fairly assume, Mr.
4 Hynard, given the relative proportion of the extent of
5 chemical cleaning done in those years compared to the
6 extent of manual cleaning done, can we fairly assume
7 that the far larger numbers for chemical cleaning
8 indicate an MNR view that for cleaning in the area of
9 the undertaking chemical measures are generally more
10 effective than manual?

11 A. I believe that that is true, that the
12 MNR position is that for many, many forestry
13 applications the chemical methods are more effective
14 than manual and I believe the extent to which that is
15 true is reflected in these figures.

16 Q. All right. Can we go this far
17 together, Mr. Hynard: I'm going to suggest to you that
18 in most, not all, but in most areas in the area of the
19 undertaking the most effective form of cleaning
20 treatment is in fact chemical cleaning and that,
21 without it, effective cleaning can't be achieved in
22 most instances.

23 A. Yes, I agree with that statement.

24 Q. Okay. And with respect to the
25 numbers indicated for manual cleaning, we see, if we

1 proceed from 1980 through to -- really to 1986, that
2 there seems to have been a gradual increase over time,
3 save for 1981-82 when there was a slight reduction in
4 the number of hectares treated, but it appears to
5 bounce back in 82-83.

6 Would you agree with me so far?

7 A. Yes.

8 Q. And that proceeding from 1982-83 to
9 1986-87 there is a steady progression or a slight
10 increase in the number of hectares treated manually?

11 A. Yes, that is absolutely true.

12 Q. All right. Then we come to 1987-1988
13 and the number of hectares treated manually is down
14 almost by -- almost two-fold; would you agree?

15 A. Yes. Yes, it is.

16 Q. All right. Can you explain to me,
17 Mr. Hynard, why that was the case?

18 A. Well, I'm not sure that I can explain
19 fully the reasons for that, I haven't investigated it,
20 but on the surface my guess would be that it results
21 from the fact that there was more work done especially
22 during 1986-87, is probably reflective of funding
23 levels including unemployment insurance, UIC Section 38
24 funds for the purposes of tending.

25 Q. You said something about that

1 in-chief. And my understanding of that situation, Mr.
2 Hynard - and I would ask for your confirmation or
3 indication to the contrary - is that in 1986 certain
4 funds were made available for manual tending purposes
5 through the UIC program that were not available in
6 other years.

7 A. I'm not sure of exactly the date.
8 Well, UIC funds have been available for a number of
9 years. I think they have been used more heavily of
10 late and especially in that year. It was not confined
11 to that year or those two years only.

12 Q. All right. Was it a question then of
13 more funding being available in that year, or simply
14 better utilization of the funds, or do you know?

15 A. I'm not certain of that. My guess
16 would be more funding available in that year.

17 Q. All right. And can you confirm for
18 me, Mr. Hynard, that to be eligible to participate or
19 to utilize the funding it had to apply to people who
20 were otherwise unemployed?

21 A. Yes, and already drawing UIC
22 benefits.

23 Q. And you referred me earlier to the
24 response of the Ministry to the Provincial Auditor's
25 Report with respect to the suggestions made by the

1 Provincial Auditor on tending, and you took me to page
2 38 of Exhibit 28.

3 I don't know if you need it, but you
4 recall that there was reference made there and you made
5 reference to the need for tending being reflected in
6 the new tending north and tending south programs; that
7 is, as at 1985 when this report was written.

8 Very generally, can you tell me what the
9 tending north program was all about?

10 A. Both programs were an effort on the
11 part of the Ministry to direct more funds into tending.

12 Q. Was it related to the UIC funding
13 issue that we have just been discussing?

14 A. No. No, they were different.

15 Q. All right. Was it related only to --
16 I'm sorry, to what years did it apply and does it still
17 exist?

18 A. I'm not absolutely certain of the
19 years to which it applied. I asked the question to Rob
20 Galloway and he thinks it might have been 86-87 and
21 87-88. We are not certain of those years but, no, they
22 do not apply at the present time.

23 Q. All right, thank you. Do you have
24 the Auditor's Report handy there?

25 A. I do.

1 Q. All right. Could you look at the
2 paragraph to which you earlier directed my attention on
3 page 38, and am I correct that the Provincial Auditor
4 has suggested with respect to those programs that the
5 programs made substantial additional funding available
6 to increase the ratio of successful plantations by
7 increasing growth rates.

8 I'm looking at the last sentence of the
9 first paragraph?

10 A. Yes, yes. Yes, that is what it says,
11 that the programs make substantial additional funding
12 available for that purpose.

13 Q. All right. Thank you.

14 A. I'm not sure it's a fair conclusion
15 to draw that the amount of tending funding has been
16 reduced overall, since that time, since the expiry of
17 those two particular programs. So I don't think you
18 should draw that conclusion. I would undertake to
19 determine that, if you wished me to do so.

20 Q. All right, that would be fine. Thank
21 you very much. With respect to that particular program
22 is the only confirmation I was seeking, it no longer
23 exists or is current?

24 A. The tending north and tending south
25 programs no longer exist, but what I was saying is, I

1 don't know that it's a fair conclusion to draw that
2 overall tending funds have been reduced during that
3 time period.

4 Q. I understand and the information will
5 be helpful. Thank you.

6 Could I look then now with you, Mr.
7 Hynard, specifically at the issue of the comparative
8 costs of manual and chemical cleaning measures, and you
9 have given some evidence, as has Mr. Galloway, on that.

10 And, Mr. Galloway, you can help me if you
11 think perhaps the question should more appropriately be
12 put to you.

13 But let's deal first, Mr. Galloway, with
14 Exhibit 620 which you will remember was the hard copy
15 of a series of overheads which you used during the
16 course of your evidence.

17 MR. GALLOWAY: A. Yes, I have it.

18 Q. All right. And if you could go to
19 Item N that, as I understand it - that is in Exhibit
20 620 - Exhibit N or Tab N was a graph depicting the
21 extent of herbicides used for chemical cleaning in the
22 years 1983 to 1988?

23 A. That's correct.

24 Q. All right. And if we put that
25 together --

1 MS. CRONK: Excuse me, sir.

2 Q. Mr. Galloway, I'm giving you copies
3 of Exhibit 652 which is the comparative figure chart
4 that I provided to Mr. Hynard. And am I correct that
5 in your Exhibit 620N, the extent in hectares of the
6 area on which chemical cleaning measures were used
7 corresponds with the number in hectares set out on the
8 left-hand side of Exhibit 652?

9 In other words, if we were to plot the
10 numerical value on the graph, the numbers would be as
11 shown in Exhibit 652?

12 MR. GALLOWAY: A. That's correct.

13 Q. All right. And again for comparative
14 purposes, if we wished to depict it in the fashion of a
15 graph, we could add the manual figures from the
16 right-hand side of Exhibit 652?

17 A. Yes, they could be added as well.

18 Q. Mr. Galloway, we have gone through
19 that exercise and we have transposed the numbers on
20 your graph, and with the Chairman's permission, I would
21 like to provide you with a copy and ask you over the
22 break to confirm that the numbers have been accurately
23 transposed.

24 MS. CRONK: And I would ask, Mr.
25 Chairman, that that be marked the next exhibit.

1 THE CHAIRMAN: Exhibit 653.

2 MS. CRONK: (handed)

3 THE CHAIRMAN: Thank you.

4 ---EXHIBIT NO. 653: Graphical depiction for
5 comparative purposes of numerical
6 values on Exhibit 620N and
manual cleaning figures
represented on Exhibit 652.

7 MS. CRONK: Q. Mr. Galloway, you will
8 recall that earlier I took Mr. Hynard and then yourself
9 to the portion of the Provincial Auditor's Report in
10 which it was suggested that the most economical method
11 of tending in Ontario is the aerial spraying of
12 herbicides, and I recall that you indicated that you
13 agreed with that observation.

14 Is that so?

15 MR. GALLOWAY: A. That's correct.

16 Q. All right. Would you also agree, Mr.
17 Galloway, that one of the most significant advantages
18 to chemical cleaning as a mode of cleaning or a mode of
19 tending, is in fact the inherent cost advantages to be
20 accrued by use of that technique, it's one of the most
21 significant advantages of the technique?

22 A. Yes, it is, and it was one of the
23 criteria that I used to evaluate the options.

24 Q. All right. Would you also agree with
25 me, however, that it isn't the only advantage, but it

1 is a clear one?

2 A. Yes.

3 Q. All right. You have indicated in
4 your report the costs in 1986 dollars for the ground
5 application of herbicides. I would ask you to go to
6 page 167 of the report that you filed before the Board.

7 MS. CRONK: That is part of the tending
8 document, Mr. Chairman, 167.

9 Q. Do you have that, Mr. Galloway?

10 MR. GALLOWAY: A. Yes. Yes, I have
11 that.

12 MS. CRONK: 167. It's page 167 of Volume
13 I of Panel 12.

14 Q. Mr. Galloway, at the top of page 167,
15 dealing with the matter of ground application of
16 herbicides, first can you confirm for me that in this
17 section of your report you are discussing cleaning
18 treatments?

19 MR. GALLOWAY: A. Yes, this is
20 discussing cleaning treatments.

21 Q. All right. And you have given us the
22 costs in 1986 dollars; am I correct in that?

23 A. That's correct.

24 Q. All right. For ground applications
25 of herbicides ranging from \$150 per hectare for 2,4-D

1 to 200 to \$300 per hectare for glyphosate or -- I
2 always have trouble pronouncing that?

3 A. Hexazinone.

4 Q. Thank you. Pursuant to an
5 interrogatory received from the OFIA, did you update
6 those figures to 1988 dollars?

7 A. Yes, I did.

8 Q. All right. Could I ask you to go to
9 the OFIA -- the response to OFIA Interrogatory No. 22
10 which is part of Exhibit 649.

11 MS. CRONK: I'm not sure the Board
12 actually has to go to it, it's before you, sir.

13 Q. Could you just tell the Board, Mr.
14 Galloway, please what the comparable figures are in
15 1988 dollars?

16 MR. GALLOWAY: A. That was question 22,
17 Ms. Cronk?

18 Q. Yes it was.

19 A. Yes. In our answer to that
20 interrogatory we indicated that in the 1986 costs of
21 \$150 per hectare for 2,4-D, \$200 to \$300 per hectare
22 for glyphosate and hexazinone, in 1988 costs in the
23 northern region - and I answered this based on time
24 constraints, and that experience as an approximation of
25 a provincial number - are estimated to be \$137 per

1 hectare for 2,4-D and \$202 per hectare for glyphosate.

2 Q. All right. The costs in respect of
3 both chemicals are coming down?

4 A. Yes, that is the reason for the
5 change. The application costs part of the equation
6 have not changed, the cost of acquisition of chemical
7 has changed.

8 Q. Then, taking those components into
9 account, the use of chemicals for cleaning purposes
10 today is even cheaper than it was two years ago?

11 A. That's correct.

12 Q. All right. And do you have any
13 reason to believe that the cost figures for reasons
14 other than the northern region would be materially or
15 significantly different than those you have provided
16 here?

17 A. Not proportionally. At least I'm not
18 sure of the exact numbers provincially, but the
19 proportions would be the same. The difference in the
20 fact that they are reduced.

21 Q. Thank you. Could you perhaps check
22 with your colleagues on the panel and confirm for me,
23 Mr. Galloway, if there is any significant difference
24 based on their experience in other areas?

25 A. Yes.

1 Q. In 1988 figures or 1989, if
2 available?

3 A. Yes, I will do that.

4 Q. Thank you. Do you have available to
5 you comparable figures for the aerial application of
6 herbicides for chemical cleaning purposes?

7 A. Other than what was in the written
8 evidence, I don't have it.

9 Q. All right. The difficulty that I
10 had, Mr. Galloway, and I may have overlooked it, but if
11 you go to page 168 there is a discussion that begins
12 there concerning the need for aerial application of
13 herbicides and there is not, at least in that portion
14 of the report, a comparable section dealing with costs.

15 Rather than take the time now, over the
16 course of the lunch break, could you review your report
17 and if those values are available to you, could you
18 provide them to me, please?

19 A. Yes, I will.

20 Q. In terms of the overall costs,
21 however, Mr. Galloway, there is information before the
22 Board on which I would like your advice. Could you go
23 to Exhibit 631..

24 MS. CRONK: Which, Mr. Chairman, is the
25 response to NAN Interrogatory No. 4 with respect to

1 Panel 12.

2 MR. MARTEL: Did you say 631?

3 MS. CRONK: I did, sir.

4 MR. GALLOWAY: Yes, I have that.

5 MS. CRONK: Q. All right. As I
6 understand this document, Mr. Galloway -- I should ask
7 you first: Did you prepare this or is there someone
8 apart from yourself who should speak to it, or are you
9 familiar with it?

10 MR. GALLOWAY: A. Yes, I'm familiar with
11 it, but I didn't prepare this.

12 Q. All right. Well, perhaps you...

13 A. More than one of us could definitely
14 speak to it.

15 Q. All right. If you are unable to give
16 me the confirmation, just indicate that, please.

17 As I read the document, what among other
18 matters it suggests, is that the total cost of the
19 chemical tending program on the very face of the
20 exhibit in 1987-88 was some \$6.1-million; is that
21 correct?

22 A. That's correct.

23 Q. All right. That included both ground
24 and aerial applications of chemicals?

25 A. That's correct.

1 Q. All right. And in comparison, the
2 costs -- the total costs of the manual cleaning program
3 was some \$1.5-million?

4 A. That's correct.

5 Q. All right. Do we then have the
6 situation wherein, in 1987-1988 the cost for 84 per
7 cent - remembering Mr. Hynard's number - the costs for
8 84 per cent of the overall cleaning program on Crown
9 lands in the area of the undertaking cost \$6.1-million
10 but the cost for only 15 per cent of that program -- of
11 that total program was \$1.5-million?

12 A. Yes, that's correct.

13 Q. All right.

14 MS. MURPHY: Excuse me. I wonder if I
15 could just ask my friend if the question you were
16 asking earlier was the cost of aerial applications in
17 1986?

18 MS. CRONK: Yes.

19 MS. MURPHY: That information was
20 provided and actually was in the evidence-in-chief of
21 Mr. Galloway and you can find that in Exhibit 620.
22 It is actually in two places, but it would probably be
23 most easiest if you look at page L.

24 MS. CRONK: Thank you, I will do that.
25 Thank you, Ms. Murphy.

1 Q. Mr. Galloway, I will come back to
2 that in a moment then.

3 So what we have then just dealing with
4 those statistics is - and please correct me if I'm
5 wrong - a situation where the preponderance of the
6 program, the vast majority of the program proportionate
7 to the amount of the program conducted using manual
8 means was considerably less expensive as a factor of
9 the total program than the manual component was?

10 MR. GALLOWAY: A. Yes, that's correct.

11 Q. All right. Do you know, sir, whether
12 the figures for 1988-89 to date are consistent with
13 those set out in Exhibit 631, or is it too early to
14 tell?

15 A. I don't know the exact figures, but
16 the same proportions would be similar.

17 Q. And I suggested to you -- well,
18 perhaps we should deal first with the document that Ms.
19 Murphy has drawn to our attention. Could you go to
20 your Exhibit 620, please?

21 A. Yes.

22 Q. And could you provide me, based on
23 that documentation, with the comparable cost figures
24 for aerial application of herbicides for cleaning that
25 I requested?

1 A. Yes, that's correct. I provided this
2 overhead as a summary of the options. And the manual
3 cleaning \$400 per hectare cost, the chemical cleaning
4 on the ground was \$200 to \$300 per hectare, and the
5 aerial cleaning was \$40 per hectare 2,4-D and \$135 per
6 hectare glyphosate.

7 Q. That was aerial?

8 A. Yes.

9 Q. And what dollars are those figures?

10 A. Those are all the 1986 dollars.

11 Q. All right, thank you. So that there
12 is a significant differential in that context as well
13 between the costs of aerial application and ground
14 application?

15 A. Yes.

16 Q. The former, aerial being lower?

17 A. That's correct.

18 Q. Thank you.

19 MS. CRONK: Thank you, Ms. Murphy.

20 q. I suggested a few moments ago, Mr.
21 Galloway, and you agreed with me that costs, while a
22 clear advantage of the use of herbicides for cleaning
23 measures, are not the only advantage associated with
24 use of that technique and I believe you agreed with me.
25 Do you recall that?

1 MR. GALLOWAY: A. Yes.

2 Q. All right. Would it be fair -- well,
3 in examining the other advantages - and I'm still doing
4 so in a comparative sense with manual cleaning
5 measures - are you prepared to agree with me that there
6 are also differentials between the two methods of
7 treatment with respect to efficacy of treatment?

8 A. Yes, that's correct.

9 Q. All right. And that relates to what
10 you 've told us earlier, the opinion you have expressed
11 that the most effective means for chemical cleaning in
12 the area of the undertaking is with the use of
13 chemicals?

14 A. Yes.

15 Q. All right. And with respect to the
16 issue of worker safety or the risk of worker injury -
17 without in any way trying to be trite - is it as clear
18 to you as it is to me that there is a higher risk of
19 worker injury inherently associated with manual
20 cleaning operations than there is with chemical
21 operations?

22 A. Yes, that is in the exhibit and is my
23 personal experience as well.

24 Q. All right. And are safety risks of
25 that kind or safety factors of that kind and risk of

1 injury taken into account in weighing the comparative
2 advantages and disadvantages of any proposed tending
3 treatment?

4 A. Yes, that would be one of the
5 evaluations.

6 Q. All right. Could I ask you to go on
7 the effectiveness issue to OFIA Interrogatory No. 14,
8 which is part of Exhibit 649.

9 A. That is Question 14?

10 Q. Yes. Thank you, Mr. Galloway. Mr.
11 Hynard, you addressed this issue in part in your
12 evidence-in-chief as I recall it.

13 Can either of you confirm for me -- well,
14 we can deal first with the actual language of the
15 interrogatory. The question that was posed was whether
16 manual cleaning methods control the root systems of
17 competing vegetation.

18 And can you confirm for me, Mr.
19 Galloway - perhaps in the first instance I will put the
20 question to you - the response given indicates
21 essentially that manual methods do not control the root
22 system, in the sense that they do not control or
23 prevent suckering or sprouting ability of hardwood
24 species. Is that correct?

25 MR. GALLOWAY: A. That's correct.

1 Q. Is that just another way of saying,
2 Mr. Galloway, that the chemical cleaning measures are
3 effective on root systems; manual cleaning measures are
4 not?

5 A. Yes.

6 Q. All right. And it is for that reason
7 the response suggests that with manual cleaning
8 operations retreatment may be required?

9 A. Yes, that's correct.

10 Q. All right. Could I direct your
11 attention specifically to the language that has been
12 used in this response to the second sentence. It says:

13 "For this reason, areas treated using
14 manual cleaning methods may require
15 retreatment."

16 In your experience, Mr. Galloway, is it
17 not the case that in fact not only is it a possibility
18 but indeed very often manual methods, when used for
19 cleaning purposes, result in the requirement for
20 retreatment?

21 A. Yes, that is my experience.

22 Q. All right. Is it the norm?

23 A. I would say that in my experience
24 it's the norm.

25 Q. Mr. Hynard?

1 MR HYNARD: A. If you are referring to
2 the release of conifers from species such as aspen,
3 yes, I would expect that to be the norm and that is
4 also my experience.

5 Q. All right. Could I ask you to go --
6 if you have Exhibit 649 before you, Mr. Galloway, could
7 I ask you to go to the next Interrogatory response
8 Question 15 -- OFIA Question 15.

9 A. Yes.

10 Q. All right. The question that was
11 posed was a request that you indicate the area -- the
12 extent of the area treated annually by manual cleaning
13 methods in the area of the undertaking, and we have
14 discussed the answer that was provided in that regard.

15 But I direct your attention to the second
16 part of the question that was asked and that was a
17 request that an indication be given of how many
18 retreatments were necessary annually on the areas
19 treated manually for cleaning purposes in the years
20 1980 to 1988.

21 Do you see that, Mr. Galloway?

22 A. Yes.

23 Q. Am I correct that the response
24 essentially indicates that that information is not
25 easily obtainable?

1 A. That's correct.

2 Q. Because it is not recorded in that
3 fashion, it is -- retreatment operations are not
4 recorded in a fashion that they are easily retrievable?

5 A. That's correct.

6 Q. All right. Is it -- I'm sorry, yes?

7 A. Yes.

8 Q. Is it fair to conclude from that that
9 we are not in a position - and I say this without in
10 any way being critical - but you are not in a position
11 to assist me as to the exact number of retreatment
12 operations that had to be undertaken in the years 1980
13 to 1988, at least in a ready fashion? That would
14 require some considerable effort?

15 A. That's correct.

16 Q. All right. Would you agree with me
17 however, Mr. Galloway, that the fact alone of the need
18 for retreatment associated with manual cleaning
19 measures is a significant factor in assessing the
20 appropriateness of a manual cleaning option?

21 A. Yes, it would be one of the most
22 significant because you do not want to have to pay for
23 that investment twice.

24 Q. And, in effect, the assessed
25 likelihood of a retreatment requirement may of and in

1 itself mean that a manual cleaning method is not a
2 viable option?

3 A. Yes, and that is reflected in the
4 numbers of the large difference between manual and
5 chemical cleaning.

6 Q. Yes, exactly. And again as a matter
7 of basics, is it fair to say that the more productive
8 the site in the area of the undertaking the greater the
9 degree of competition that one may fairly expect and,
10 as well, the greater the likelihood in those
11 circumstances that retreatment would be required if a
12 manual cleaning method was utilized?

13 A. Yes, the more productive the site
14 then there is a much higher probability that cleaning
15 would be required, and also that if you were treating
16 that manually there would be a higher probability that
17 you would have to retreat it.

18 Q. Does it follow from that, Mr.
19 Galloway, that the more productive the site the more
20 imperative the need for chemical cleaning measures?

21 A. Yes, I would say that that follows.

22 Q. All right.

23 A. Again, it would depend on, as Mr.
24 Hynard indicated, you know, where for conifer
25 production and the species of competition. So there

1 might be differences, but in general that would follow.

2 Q. And in the context of the data which
3 Mr. Hynard has provided in his pie chart as to the
4 breakdown of the nature of tending treatments carried
5 out on Crown lands, first, am I correct that there is
6 no form of biological control measure available with
7 respect to the control or suppression of competing
8 vegetation; that's a non-issue, on the state of the
9 current technological developments there is no such
10 option available?

11 A. As far as I know, that's correct.

12 Q. All right. So that in the area of
13 the undertaking what we are really talking about in
14 terms of tending options are those identified by Mr.
15 Hynard in Exhibit 609.

16 Do you have a copy of that available to
17 you?

18 A. Yes, I will.

19 Q. That's the pie chart.

20 A. Yes, I have that.

21 Q. All right. Those are the options
22 that we are talking about, those being mechanical
23 cleaning, manual cleaning and chemical cleaning either
24 by air or by ground?

25 A. Yes.

1 Q. And Mr. Hynard has indicated that the
2 other three categories mentioned; that is, thinning,
3 pruning and other, do not involve cleaning -- do not
4 involve a cleaning element?

5 A. That's correct.

6 Q. All right. So that when we are
7 talking about cleaning, am I right that what we are
8 really talking about in the area of the undertaking is
9 a chemical treatment program designed to use the most
10 appropriate chemical and the most effective way
11 possible given prevailing site conditions. That's
12 really the nature of the program in terms of its
13 dimension?

14 A. On the majority of sites and the
15 majority of our program, that's correct.

16 Q. All right. And that is true both
17 from an aerial perspective; that is, the amount of
18 hectares treated. We have seen that; have we not?

19 A. Yes.

20 Q. And true as well in terms of the need
21 to deal with competing vegetation?

22 A. Yes.

23 Q. And true as well, I suggest, from an
24 efficacy point of view?

25 A. Yes, that's another major factor in

1 that choice as well.

2 Q. All right. Now, to be fair, there
3 are also circumstances; are there not, where manual
4 cleaning treatments may be effective and may be, in an
5 economic sense, entirely viable?

6 A. That's true. And they also, as
7 indicated in the direct evidence, would be of
8 importance in certain specific site conditions.

9 Q. All right.

10 MRS. KOVEN: Mr. --

11 MS. CRONK: I'm sorry, Ms. Koven.

12 MRS. KOVEN: Pardon me. Mr. Galloway, is
13 there actually any manual cleaning that takes place in
14 the boreal forest?

15 MR. GALLOWAY: Yes, there is, and it
16 usually -- it is reflected in the numbers in Mr.
17 Hynard's charts, and it is not of the same importance
18 as the aerial or ground cleaning is, but it is an
19 important tool to be used in certain specific sites for
20 various reasons; for instance, other values or a small
21 area.

22 MRS. KOVEN: I was under the impression
23 that the statistics we see on manual cleaning applied
24 mostly to the Great Lakes/St. Lawrence Forest area of
25 the undertaking?

1 MR. GALLOWAY: I don't have a breakdown
2 of the total hectares, perhaps Mr. Hynard does.

3 MR. HYNARD: I do have data on that and I
4 can return after lunch with that showing a breakdown of
5 the percentage of manual over chemical methods applied
6 by region which would approximate the boreal/Great
7 Lakes split.

8 MS. CRONK: Q. Mr. Hynard --

9 MRS. KOVEN: The impression --

10 MS. CRONK: I'm sorry, Ms. Koven, perhaps
11 I can assist with that.

12 Q. My note of your evidence-in-chief on
13 the matter, Mr. Hynard - and you might wish to confirm
14 this or provide obviously whatever other information is
15 responsive to the question - was that of the manual
16 cleaning number that you gave on Exhibit 609, some 60
17 per cent of it pertained to the Great Lakes/St.
18 Lawrence Forest area?

19 MR. HYNARD: A. Yes, that was my
20 evidence, 60 per cent of that amount of manual
21 cleaning was down in the Great Lakes/St. Lawrence
22 Forest, and of the remaining 40 per cent that was done
23 in the boreal forest, or at least those regions that
24 were largely boreal, it included manual cleaning, for
25 example, the juvenile spacing of jack pine that is done

1 with brush saws for the simple reason that herbicides
2 are not effective in that situation.

3 It would include treatments -- manual
4 cleaning in areas of concern and small projects. It
5 may have been assisted by the availability of UIC money
6 to catch up with old projects.

7 And I think it is worth noting too that
8 in my statement of evidence in Volume 1 of Panel 12 I
9 noted that if it is the intent to go the manual
10 cleaning route, as opposed to chemical, that there
11 usually is not a question of a straight substitution at
12 all, that it requires an entirely different
13 silvicultural package, a package that gives your
14 conifers, your planted conifers a better start, a
15 faster start with a longer period of freedom from
16 competition.

17 So it might include things like a much
18 heavier site preparation, it might include chemical
19 site preparation. So the avoiding chemical cleaning
20 might force you into chemical site preparation and you
21 might choose that option where your crop trees were
22 also vulnerable to the herbicide. It might include a
23 much heavier mechanical site preparation which could in
24 itself have detrimental effects.

25 So that it is not simply a question of

1 looking at manual versus chemical, you have to
2 restructure the entire silvicultural package to make it
3 workable and look at all of those components, but the
4 end conclusion is the same as we have given to you just
5 now and, that is, that for the most applications in the
6 boreal forest chemical methods provide a cheaper,
7 better, more effective control of competition.

8 MRS. KOVEN: My understanding was that
9 for the chemical cleaning that's done in the Great
10 Lakes/St. Lawrence forest much of that is unavoidable,
11 that in fact chemical cleaning is not an alternative.

12 MR. HYNARD: Of...?

13 MRS. KOVEN: That you must do manual
14 cleaning on certain sites in that area.

15 MR. HYNARD: Yes, that's right. And
16 there is chemical cleaning performed in the Great
17 Lakes/St. Lawrence Forest and it is performed for
18 exactly the same reasons that it is done in the boreal.

19 MRS. KOVEN: So the direction that the
20 Ministry has taken appears to be one of using manual
21 cleaning techniques only where chemical alternatives
22 aren't possible, with some exceptions, such as the
23 availability of UIC money or conditions like that?

24 MR. HYNARD: Well, I wouldn't say that
25 the availability of UIC money changes the decision, it

1 just helps you do more of the mechanical methods where
2 you have decided to use them.

3 But your question of the manual cleaning
4 methods carried out in the Great Lakes/St. Lawrence
5 Forest, they are largely a result of circumstance. You
6 will recall the photographs in which I showed the crop
7 trees were the same species as the competing
8 vegetation, so a herbicide would not be appropriate at
9 all in a case like that.

10 But where all things are equal, one being
11 the same effectiveness as the other, the chemical
12 methods have other benefits that Mr. Galloway just
13 outlined: Cost, practicability, especially in areas
14 where you don't have access or labour. Those are all
15 other considerations that do lead one towards chemical
16 methods.

17 MS. CRONK: Q. Mr. Hynard, is it fair to
18 say that there are situations where you need manual
19 tending as an option and there are situations in which
20 that is really the only viable method to be undertaken?

21 MR. HYNARD: A. Oh yes, that's
22 absolutely true.

23 Q. All right. But having said that and
24 recognizing the importance of that option from the
25 forester's point of view, do we simply come to this:

1 That in the majority of cases -- situations in the area
2 of the undertaking, from a cleaning perspective, and I
3 suppose from overall tending perspective, chemical
4 tending is the method of choice for a variety of
5 reasons that we have discussed?

6 A. Yes, for all those reasons that we
7 have discussed. Each one is site-specific, that is
8 true, but generally across the area of the undertaking
9 chemical methods are preferred for those reasons that
10 we have described.

11 Q. You mentioned during the course of
12 your evidence-in-chief, Mr. Hynard, in brief the
13 suggestion that in some circumstances tending after
14 free to grow status had been achieved might be
15 appropriate. Do you recall that?

16 A. Yes, I do.

17 Q. All right. Do I understand your
18 evidence to be that in some circumstances it would be a
19 legitimate silvicultural activity to tend after free to
20 grow had been achieved?

21 A. Yes.

22 Q. All right. Can you give me an
23 example of when that would be the case?

24 A. Yes, I will give you two examples.
25 The first one, you recall in my direct evidence that I

1 said there were two basic reasons that we conducted
2 tending operations, one was to ensure the survival or
3 success of newly regenerating stands; and the second
4 purpose was to augment the growth in yield of the
5 harvest, including the thinnings, or to grow a specific
6 product.

7 And I showed photographs during my direct
8 evidence of thinning operations and improvement cuts
9 and pruning operations designed to do exactly that, to
10 augment the yield at harvest or to produce a certain
11 product or augment value. Those operations are all
12 conducted after free to grow. So, yes, they are most
13 appropriate for all the reasons I described in my
14 direct evidence.

15 The second case -- the second example
16 would be to, once again, ensure the survival or success
17 of a newly regenerating stand, however, let's add after
18 free to grow.

19 It is possible for a young stand to have
20 attained free to grow status and slipped from it; in
21 other words, it had the stocking, it had the height and
22 in the view of the assessor it had freedom from
23 competition, but given the capability of a fast growing
24 species like poplar to outgrow some conifers, it is
25 possible for a young stand to slip from freedom from

1 competition to, once again, being out-competed by those
2 same species.

3 Q. Just dealing with that example, Mr.
4 Hynard, and that is the overreaching of poplar, if I
5 can put it that way, are there situations of which you
6 are aware where, on a spruce plantation for example,
7 free to grow status might have been achieved, but by
8 virtue of the activities of poplar that you have just
9 described, some years later competition becomes a
10 threat or a possible threat again?

11 A. Yes, and that's the normal situation
12 for me with white pine and I expect that to occur.

13 Q. Would you agree with me then, bearing
14 in mind the kinds of circumstances that you have
15 outlined, that tending post-free to grow in appropriate
16 circumstances can be very important to the issue of
17 timber production?

18 A. Yes, I would agree with that.

19 Q. And I have in mind particularly the
20 issue of saw log production?

21 A. Yes, and there again a young jack
22 pine stand that had already passed free to grow, it had
23 the stocking, it had the height, it had the freedom
24 from competition, but excessive density, spacing, would
25 improve saw log production; yes, I agree with that.

1 Q. Does it follow from that, Mr. Hynard,
2 that tending post -- there is no reason that tending
3 post-free to grow as a legitimate silvicultural
4 activity should not be contained in the groundrules
5 both to timber management plans and to FMA agreements
6 in appropriate circumstances?

7 A. Yes, and any prescriptions for those
8 types of treatments would be in the silvicultural
9 groundrules of those timber management plans.

10 It may not specifically state post-free
11 to grow, it would simply state that tending as required
12 on a site. It may not define that it is either before
13 or after free to grow for the simple reason that if the
14 crop requires tending, it requires tending regardless
15 of its previous status.

16 Q. In some instances is it specifically
17 identified in the silvicultural groundrules as being a
18 post-free to grow form of tending, or do you know?

19 A. I can't think of an example to give
20 you offhand, but it would not surprise me at all to
21 find that in some silvicultural groundrules.

22 Q. All right. Is it then your evidence
23 that when we see tending included in the groundrules
24 both to the timber management plan and to an FMA
25 agreement, that depending upon site conditions and the

1 actual presenting conditions of the stand, may include
2 tending post-free to grow as well as tending pre
3 post -- free to -- never mind, let me try that again.

4 A. Pre-free to grow.

5 Q. Does it include both, both before
6 free to grow and after?

7 A. Yes, it would include both.

8 Q. All right, thank you.

9 A. That would certainly be true -- they
10 would normally -- well, they would be identical, the
11 silvicultural groundrules both in the FMA and the
12 timber management plan would be identical. And so,
13 yes, if it was stated there, then that's the treatment
14 to be conducted.

15 Q. And it is, in your opinion, a
16 legitimate silvicultural activity in appropriate
17 circumstances of the kind that you have described, for
18 example?

19 A. Yes, it is.

20 Q. All right. Thank you very much.

21 Mr. Galloway and Ms. Krishka, there was
22 another issue dealing generally with tending that I
23 would like to clarify, if I could, and it has to do
24 with what I have termed the preventive aspects of
25 tending.

1 Mr. Galloway, you recall that one of the
2 revised documents that was provided during the course
3 of your evidence was a revised table from page 156 of
4 your report. It was part of Exhibit 605, the tending
5 report.

6 That was your chart, wasn't it, Mr.
7 Galloway, that was amended?

8 MR. GALLOWAY: A. Yes, that's correct.

9 Q. All right. Would you go to that,
10 please, if you would.

11 MS. CRONK: This was part of Exhibit 605,
12 Mr. Chairman, which was the errata letter filed by Ms.
13 Murphy that had a number of documents attached to it.

14 MR. FREIDIN: Is that the May 31st
15 letter?

16 MS. CRONK: Yes.

17 MR. FREIDIN: The witnesses don't have a
18 copy.

19 MR. GALLOWAY: In Exhibit 620 the
20 corrected version is in the overheads.

21 MS. CRONK: Mr. Galloway, perhaps -- I am
22 not sure, Mr. Chairman, that the Board needs have it, I
23 can do this another way.

24 Q. Do you have the revised copy
25 available to you?

1 MR. GALLOWAY: A. Yes. It was, as I
2 mentioned, a part of the overheads in 620 -- Exhibit
3 620.

4 Q. All right. Dealing then with the
5 revised version of that chart, could you tell me please
6 where in the process-making decisions for stand
7 maintenance or stand release the preventive aspects of
8 tending are taken into account or come to the
9 forefront?

10 A. Yes. In the decision where you
11 decide: Is the competition reducing or expected to
12 reduce crop performance significantly, and that has
13 preventative connotations and is very important to the
14 decision whether you require the release treatment or
15 not because you would like to -- you have to have the
16 treatment applied at the appropriate time before
17 suppression actually would occur.

18 Q. On productive sites, Mr. Galloway,
19 would it be fair to say that the ideal objective, were
20 it achievable, would be in fact to prevent the
21 emergence of competition to desired species?

22 A. Yes, that's correct.

23 Q. All right. And are there
24 circumstances which now occur to you where the need to
25 prevent competition would be sufficient to warrant a

1 tending decision? In what kinds of circumstances would
2 you make that decision, that you were going to set out
3 to prevent competition?

4 A. You would -- in your silvicultural
5 groundrules you would be -- the predictive part of that
6 where you outline your expected probability for need
7 for tending and a situation on a productive site, for
8 example, where you would expect a high degree of
9 competition you would have some options; for example,
10 modify the site preparation technique or tend at an
11 earlier stage to reduce that competition before it is
12 suppressing the crop trees.

13 Q. All right. Ms. Krishka, my confusion
14 on this issue arose because in reviewing my notes over
15 the weekend from your evidence I had taken down - and
16 perhaps I did so inaccurately - a statement by you that
17 treatment, presumably tending, only occurs when trees
18 are suppressed and I want to tie you to my notes.

19 But (a) do you recall saying that; if so,
20 did you mean it; if not, what is your view?

21 MS. KRISHKA: A. My view is that I agree
22 with what Mr. Galloway just said, that cleaning
23 treatments may be to suppress trees -- to suppress
24 competition which is currently competing with the
25 conifer crop trees or to suppress competition which is

1 expected to potentially compete with the conifer crop
2 trees.

3 And I might add that in the case of
4 cleaning treatments we are generally not attempting to
5 prevent emergence of vegetation, we are attempting to
6 suppress vegetation which may or is currently competing
7 with that vegetation. We don't necessarily or we
8 may -- we are not necessarily attempting to prevent the
9 emergence of such vegetation, we are just trying to
10 keep it to a point where it is not in a competitive
11 position.

12 Q. All right. Is prevention in that
13 sense, in the sense of a cleaning treatment of that
14 kind, prevention of dominance of competing species?

15 A. That would be correct.

16 Q. All right, thank you.

17 MS. CRONK: Mr. Chairman, on the issue
18 generally of tending I expect to be about another five
19 or ten minutes. Do you wish to continue?

20 THE CHAIRMAN: Yes. Why don't we finish
21 off that topic and then we will break for the lunch
22 hour.

23 MS. CRONK: Thank you.

24 Q. Mr. Hynard and Mr. Galloway, I am not
25 sure to whom these questions should appropriately be

1 addressed. So in the first instance, Mr. Hynard, I
2 will put them to you and you can tell me if that's
3 appropriate.

4 They have to do with the process for
5 selecting tending options, the process that under the
6 current policy framework and structure of timber
7 management planning is in place with the Ministry, and
8 I wish to ensure that I understand it correctly as it
9 relates to tending.

10 Am I correct that we start from the
11 proposition that tending options generally are recorded
12 in the silvicultural groundrules to a timber management
13 plan?

14 MR. HYNARD: A. Yes, they are. And
15 either Mr. Galloway or myself could answer your
16 questions.

17 Q. All right. And given that the
18 options are recorded in the groundrules, are the
19 methods dealt with in the silvicultural groundrules to
20 a timber management plan as well?

21 A. Well, if by methods you mean the
22 techniques, no, they would not be so specific as to
23 detail the techniques that would be employed. For
24 example - and I will take an example from my own unit -
25 if it said pre-commercial thinning by crop tree

1 release, it would not specify whether the technique to
2 be employed was axes or chain saws.

3 Q. If, however, the method of tending
4 was aerial spraying versus another activity, would that
5 be specifically identified in the silvicultural
6 groundrules?

7 A. Rob is more familiar with timber
8 management plans in the boreal, I will let him --

9 Q. Mr. Galloway, can you help?

10 MR. GALLOWAY: A. It might be in certain
11 cases because it is usually the preferred option, but
12 more correctly it would usually just have tending
13 cleaning requirements would be there.

14 And then in the summary of the forecast
15 of renewal and maintenance operations, tabular form
16 within the timber management plan, would have a
17 breakdown in total of the manual, chemical ground and
18 chemical aerial cleaning required.

19 Q. All right. And once that breakdown
20 is in place, am I correct that really the final
21 decision as to what option will be utilized on any
22 given site is made as part of preparation of the annual
23 work schedule?

24 A. That's basically correct. The
25 only -- perhaps the time, for an example, that might

1 preclude that is where in an area of concern there
2 would be a specific prescription for that area of
3 concern, might be developed under the maintenance
4 prescription.

5 Q. And you mean by that in advance of
6 the annual work schedule?

7 A. Yes, that would be at the time of the
8 timber management plan for the five-year plan, and then
9 the annual work schedule is when it would outline in
10 detail the areas -- specific areas by treatment type.

11 Q. All right.

12 MR. HYNARD: A. Just so there is no
13 confusion on that point though, that is
14 differentiating between the silvicultural groundrules
15 for normal operating areas, which is the Table 4.11 in
16 the plan, as opposed to the operating prescriptions for
17 areas of concern which is the following Table 4.12.

18 In the one case it would be specified and
19 in the other it would not.

20 Q. All right. In the one case being for
21 areas of concern it would be, and when you said for the
22 other it would not, you meant for normal operating
23 procedures which, according to Mr. Galloway's evidence,
24 would then be dealt with in tabular form?

25 A. Yes, that's right. That's right.

1 And I should qualify that by saying that if the value
2 or the concern in that area of concern would be harmed
3 in some way by, for example, aerial herbicide
4 application, then the prescription would specify.

5 However, there may still be options in
6 areas of concern if they were all acceptable for that
7 particular forest value, and I will go back again to my
8 axes versus chain saws. If it is not important, it
9 might not specify it.

10 Q. All right, thank you. And dealing
11 generally with the issue, Mr. Galloway and Mr. Hynard,
12 both of you, the issue of selecting the appropriate
13 tending option, the Board has heard in the evidence of
14 a number of you, if I can put it that way, that the
15 exercise of the professional forester's professional
16 judgment is a key element in the ultimate
17 decision-making and choosing between tending options.
18 Do I have that correctly?

19 A. Absolutely.

20 MR. GALLOWAY: A. Yes.

21 Q. All right. And that a factor going
22 into the exercise of that professional judgment is the
23 individual's personal experience on the unit in
24 question or, I suggest, his or her knowledge of the
25 unit in question which might not be derived from

1 personal experience but knowledge gained in other ways.

2 Is that fair?

3 MR. HYNARD: A. That's fair.

4 Q. All right. Mr. Galloway, do you
5 agree?

6 MR. GALLOWAY: A. Yes, that's correct.

7 Q. All right. So what we are really
8 looking at or talking about in terms of the opinions
9 you have expressed is that judgment is a critical
10 factor and that what goes in to the informed exercise
11 of that judgment in making the decision is both
12 personal experience and familiarity with the actual
13 site?

14 A. Yes, and I outline that in the
15 overheads as well, and that's an important part of that
16 feedback loop in the evaluation of your alternatives,
17 is your own personal experience, the experience of
18 staff involved on that area, experience gained by
19 discussing with peers in other areas under similar
20 conditions, and past histories as well. And all of
21 those are very important in formulating the choice of
22 options.

23 Q. All right. Does it follow from that,
24 Mr. Galloway, that when it comes to choosing among
25 various silvicultural treatments, continuity of

1 personnel involved in making those decisions is a
2 decided advantage?

3 A. Continuity, as Mr. Hynard would vouch
4 for, is important, but it is not all consuming either
5 because the records and transfer of knowledge and
6 experience is important when that continuity, for
7 whatever reason, cannot be there.

8 Q. I think the question was that it was
9 a decided advantage?

10 A. Yes, it is an advantage.

11 Q. And in circumstances where the
12 persons involved on a particular unit have been over
13 the years involved in that unit, then clearly that can
14 only contribute to the knowledge base on which
15 professional judgment is then exercised?

16 A. Yes, that's correct.

17 Q. And in that sense it is a clear
18 advantage?

19 A. Yes.

20 Q. Thank you. That would apply, I
21 suggest, be it Ministry personnel or industry
22 personnel?

23 A. Yes.

24 Q. Thank you.

25 MS. CRONK: The one final area, Mr.

1 Chairman, arises from a question that one of the Board
2 members put to Mr. Hynard dealing with tending.

3 Q. And you will recall, Mr. Hynard, that
4 the issue of when you tend naturally regenerating
5 stands has come up in a number of contexts, and one
6 example that you were given was the example of a site
7 which was subject to a natural fire, a burn, and had
8 started to come back naturally as a result of the fire
9 event.

10 Just dealing with that issue in the
11 context of what happens in the area of the undertaking,
12 am I correct that there are parts of northern Ontario
13 in the area of the undertaking where harvesting is not
14 planned?

15 MR. HYNARD: A. I believe that question
16 was directed to Mr. Galloway.

17 Q. I'm sorry. You see I'm getting the
18 two exchanges confused, Mr. Galloway.

19 MR. GALLOWAY: A. Yes, there is parts of
20 the area of the undertaking where harvesting is not
21 planned.

22 Q. All right. And in those areas, if
23 fire occurs, does nature in effect take over?

24 A. Yes. The fire would in sort of broad
25 terms replace the harvesting and it would have

1 different effects but similar.

2 Q. All right. You mean by that, I take
3 it, that fire in that context is a natural form of
4 harvesting as opposed to a man-caused form of
5 harvesting?

6 A. Yes, that's correct.

7 Q. All right. After the event of fire,
8 if no harvesting is planned, in those circumstances is
9 nature then allowed to continue its course so that the
10 lands begin to naturally regenerate?

11 A. In the majority of cases that is true
12 and also there might be intervention in renewal and
13 maintenance on those sites if it was required upon
14 investigation.

15 Q. All right. Well, I'm not being clear
16 and that's my fault. I'm distinguishing, Mr. Galloway,
17 between the situation where there is no plan for
18 harvest.

19 A. Right.

20 Q. And where there is and let's deal
21 with the first one first, no plan for harvest. All
22 right. In those circumstances the event of fire is a
23 form of natural harvesting, you will agree?

24 A. Yes.

25 Q. Thereafter, if the wood resource from

1 those lands had not been and is not intended in the
2 future to be committed as a wood supply source, would
3 you agree with me then in those circumstances the
4 likelihood is that natural regeneration would be
5 allowed to proceed?

6 A. Yes, that's true.

7 Q. Without intervention.

8 A. Correct.

9 Q. All right. Indistinct of that
10 situation however, where the fire occurs on lands where
11 harvesting had been planned, or to use a different
12 phraseology for the same concept, if the wood had been
13 committed for a future wood supply source or it was
14 likely in the future to be required to service such a
15 source, in those circumstances am I right that even
16 though natural regeneration may commence and indeed
17 proceed for some time, tending may indeed be required
18 and undertaken?

19 A. Yes, that's correct.

20 Q. All right. Is the distinction then
21 in the two circumstances - and clearly the distinction,
22 because I am putting it to you as one - but I'm asking
23 you whether you think it's a valid distinction, whether
24 the wood has some future or current purpose whether
25 it's anticipated that it will be needed?

1 A. Yes, that's correct.

2 Q. All right. But that decision or that
3 anticipation that can occur at various points in time,
4 it can be before the fire or after the fire; you will
5 agree?

6 A. That's correct, they may change in
7 that supply needs, the requirements.

8 Q. All right. So that in effect where
9 the land -- the wood resource on the land in issue is
10 needed either pursuant to a licence or an FMA agreement
11 or indeed on a Crown management unit, if the Crown
12 management unit is functioning as a wood source -- a
13 source of wood supply, then tending may be undertaken
14 notwithstanding the development of natural
15 regeneration?

16 A. Correct.

17 THE CHAIRMAN: Mr. Galloway, what about
18 if the Ministry felt that the area affected by a fire
19 could be utilized in the future for an other than wood
20 production use, say as a park or some other area, that
21 for some reason the Ministry felt should be not only
22 regrown but regrown in a more acceptable manner than
23 might be the case with just natural regeneration?

24 MR. GALLOWAY: Definitely the objectives
25 obviously then would be quite different, but - and I

1 don't know of a situation like that - but a planned
2 intervention of renewal or maintenance might be
3 required to achieve that end objective.

4 And in that situation you might actually
5 do that intervention of renewal or maintenance in that
6 situation.

7 THE CHAIRMAN: For an other than wood
8 source reason?

9 MR. GALLOWAY: Right.

10 MS. CRONK: Thank you, Mr. Chairman.

11 MR. HYNARD: I certainly could think of
12 examples where renewal efforts have been made for
13 purposes other than timber production, for wildlife
14 purposes, very small scale and I don't know whether
15 there were tending efforts made in conjunction with
16 them, but it's certainly in the realm of possibility.

17 MS. CRONK: Q. I suppose the point in
18 the end from my perspective comes to this: That
19 following harvesting in whatever circumstance that
20 occurs, be it natural or caused, deliberate, is there
21 any reason conceptually to the professional forester's
22 mind as to why the follow-up should be any different?

23 MR. HYNARD: A. (nodding negatively)

24 Q. Mr. Galloway?

25 MR. GALLOWAY: A. No, that's correct.

1 You would evaluate the site and the objectives and then
2 make whatever prescriptions are required or lack of
3 therefore.

4 Q. And the evaluation would proceed
5 clearly on the basis of what value was the priority and
6 what was receiving the higher priority for preservation
7 or development?

8 A. Yes.

9 Q. Thank you.

10 MS. CRONK: Mr. Chairman, could I stop
11 there now?

12 THE CHAIRMAN: Very well. We will break
13 until two o'clock.

14 ---Luncheon recess taken at 12:20 p.m.

15 ---On resuming at 2:00 p.m.

16 THE CHAIRMAN: Thank you. Be seated,
17 please.

18 Ms. Cronk, I'm given to understand that
19 you expect to be cross-examining this afternoon until
20 approximately 4:30; is that correct?

21 MS. CRONK: That's correct, yes.

22 THE CHAIRMAN: Then for the benefit of
23 the other parties, I think the Board will rise after
24 Ms. Cronk's examination today.

25 We are given to understand that the

1 Nishnawbe-Aski Nation will be cross-examining first
2 thing tomorrow morning and they expect I believe to be
3 half a day, and then we think the order has been
4 arranged for the Federation to go next, and you expect
5 to be a day?

6 MR. HANNA: (nodding affirmatively)

7 THE CHAIRMAN: And then we will go to Mr.
8 Castrilli, wherever he is, for Forests for Tomorrow and
9 then follow with the Ministry of the Environment. And
10 hopefully -- well, I don't know if we will finish this
11 week or not. We will try.

12 MS. CRONK: Mr. Chairman, there is only
13 one thing I would like to add to that, perhaps I should
14 alert you now.

15 Part of the materials that I will be
16 seeking to file with the Board later this afternoon are
17 the documentary backup to a response given by the
18 Ministry to one of the OFIA interrogatories relating to
19 the efficacy data for the use of insecticides.

20 The actual response was fulsome and it
21 was a volume like this. I have taken part of the
22 volume but it's still an inch or so thick and it
23 occurred to me in discussions with my immediate
24 colleagues over lunch that although it was a response
25 from the MNR, therefore I was entitled we thought to

1 assume some familiarity with that documentation,
2 nonetheless it has been put together in a way that we
3 didn't receive it and that was towards the end of what
4 I propose to question witnesses about.

5 And my suggestion is going to be that I
6 file that with the Board, provide it to the witnesses
7 over the evening and let them have a chance to refresh
8 their memory about it, because it is comprehensive,
9 it's all numbers.

10 THE CHAIRMAN: Okay. And I take it you
11 wouldn't be more than half hour on that in the morning?

12 MS. CRONK: It might be about 45 minutes,
13 but I would certainly hope not longer than that, but I
14 will certainly be longer if we don't go through it in
15 that manner.

16 I am sorry for those implications.

17 THE CHAIRMAN: Okay. Well, no, these
18 things happen. We will go through it in that manner
19 then.

20 MS. CRONK: Thank you.

21 Q. Mr. Hynard and Mr. Galloway, could I
22 return to the matter that we discussed this morning.
23 It occurred to me over the noon break that I perhaps
24 put a series of questions to you in a way that wasn't
25 entirely appropriate and I would like to revisit some

1 of the statistics that we discussed this morning.

2 And it relates to the overall tending
3 program conducted by the MNR in the area of the
4 undertaking of the relative costs thereof as broken
5 down between the use of chemicals and the use of manual
6 treatments.

7 Could I ask you to go back again, if you
8 wouldn't mind, Mr. Hynard, to Exhibit 609 your pie
9 diagram and you can start from there.

10 I think you will need or will find of
11 assistance Exhibit 609, Exhibit 631 which was the
12 costing interrogatory response and 652 which was the
13 composite of the manual and chemical cleaning.

14 MS. CRONK: 609, 631, 652.

15 THE CHAIRMAN: I'm batting zero so far.

16 MS. CRONK: I can donate a copy of 609,
17 Mr. Chairman (handed), but I don't have another copy of
18 631.

19 THE CHAIRMAN: I have got 651.

20 MS. CRONK: 631.

21 MR. FREIDIN: Which one are you looking
22 for, Mr. Chairman, 631? I can lend you a copy.

23 THE CHAIRMAN: Okay. I'm taking
24 donations from any one.

25 MR. FREIDIN: (handed)

1 MS. CRONK: I don't think you will need
2 the composite one in particular, Mr. Chairman.

3 THE CHAIRMAN: Okay. Well, I have one
4 copy here of the other one. Okay.

5 ---Discussion off the record

6 MS. CRONK: Perhaps I will just do it in
7 such a way that the numbers are on the record here.

8 MR. FREIDIN: Let me have an extra copy.
9 Have you got an extra copy of 631, Cindy? Can you lend
10 the Board a copy of 631?

11 MS. KRISHKA: I can lend them one.

12 MR. FREIDIN: We can lend you another
13 one, Mr. Chairman.

14 THE CHAIRMAN: I don't know what's
15 happened to them. I'm sure we got them. Okay.

16 MS. CRONK: Thank you.

17 Q. Mr. Hynard, Exhibit 609?

18 MR. HYNARD: A. I'm at 609.

19 Q. When I put my questions to you this
20 morning and then followed up with Mr. Galloway I did it
21 on the basis of focusing on the proportion of tending
22 treatments that were chemical cleaning treatments and
23 manual cleaning treatments. I would ask you to set for
24 the moment that discussion aside.

25 Looking at Exhibit 609 and leaving aside

1 any distinction based on cleaning, am I correct that 80
2 per cent of the entire tending program conducted on
3 Crown lands was comprised of chemical tending measures?

4 A. I have set it all aside, but I would
5 say that that is the correct order of magnitude. I
6 don't know the exact number. I would be glad to
7 calculate it for you, if you still have your
8 calculator.

9 THE CHAIRMAN: Ms. Cronk, is there some
10 significance between whether it is 80 or 87 per cent?

11 MS. CRONK: No, there isn't, sir. So the
12 87 per cent I put him was in a different context this
13 morning and I just want to go back and correct that.

14 MR. HYNARD: Oh, I see, yes. I believe
15 in my direct evidence I said that 87 per cent of all
16 tending was cleaning for the purpose of ensuring the
17 survival or success of newly regenerating stands.

18 MS. CRONK: Q. well, just looking at the
19 pie proportions here, we can get at it this way, of the
20 overall tending program, approximately 80 per cent
21 represents chemical tending?

22 MR. HYNARD: A. Yes. Certainly appears
23 to be about 80 per cent.

24 Q. Thank you. And the balance, 20 per
25 cent, mechanical and manual tending; am I right in

1 that?

2 A. That's right.

3 Q. All right. Then if we go to Exhibit
4 631 which is the cost interrogatory response, and I
5 should have you confirm that the figures in Exhibit 609
6 are 1986-87 data?

7 A. Yes, they are.

8 Q. All right. Then we come to Exhibit
9 631 and the element that occurred to me as being
10 inappropriate first arises. The data in this answer is
11 87-88; is it not?

12 A. Yes, it is.

13 Q. All right. And looking again at the
14 overall tending program, am I correct that in 1987-88,
15 the total mechanical and manual tending program cost
16 \$4.2-million?

17 A. Yes, it did.

18 Q. The total chemical tending program
19 cost \$6.1-million.

20 A. Yes, that's correct.

21 Q. All right. The manual cleaning
22 program, however, in 1987-88 is a component of the
23 overall manual tending program; am I right?

24 A. Yes, it is.

25 Q. And we know that the manual cleaning

1 program in 87-88 was lower than it had been in 86-87?

2 A. Yes, it was.

3 Q. All right. My difficulty, you will
4 appreciate it, Mr. Hynard, is I'm trying to compare
5 like numbers and to be fair in doing it, I do not know
6 what the number is for the overall mechanical and
7 manual tending program in 1986 and '87.

8 But would it be fair to conclude that it
9 was at least - in fact, we know it is slightly lower at
10 least - it was at least that reflected in Exhibit 631?

11 A. I'm sorry, I didn't understand that
12 entirely, Ms. Cronk.

13 Q. The cost of the 1987-88 program
14 overall for manual and mechanical tending was
15 \$4.2-million?

16 A. Yes, it was.

17 Q. But we know that less mechanical and
18 manual tending was done in that year than had been done
19 in 1986-87?

20 A. Yes, that's true.

21 Q. And I'm asking you whether you would
22 anticipate that there was a significant variation in
23 the number of hectares treated manually and
24 mechanically in 1987-88 than had been the case in
25 86-87, or is it approximately?

1 A. I would think that it's
2 approximately, it would be slightly lower I think in
3 87-88, but not a great deal.

4 Q. That means, does it not then, that...

5 A. Oh, wait. Yes, slightly lower. I
6 don't know the exact number.

7 Q. All right. And that in part is the
8 result of the fact that the manual cleaning in 87-88
9 went down?

10 A. Yes.

11 Q. Okay. then trying to get a cost
12 comparison, and assuming that the numbers were
13 approximately the same, although slightly lower, in
14 87-88, am I right that 20 per cent of the total tending
15 program in 87-88 cost \$4.2-million and it was
16 attributable to manual and mechanical tending?

17 A. Yes, in that order of magnitude, 20
18 per cent.

19 Q. All right. And conversely, 80 per
20 cent of the entire tending program cost \$6.1-million
21 and that related to chemical tending?

22 A. Yes. And just so that if this sounds
23 all really confusing following the numbers, the
24 chemical methods represent a disproportionately high
25 amount of the total tending effort and a

1 disproportionately low amount of the cost on a per
2 hectare basis.

3 The mechanical is a lesser amount, but it
4 costs considerably more per hectare and those numbers
5 will lead you to that conclusion.

6 Q. The overall point being perhaps
7 laboriously made, Mr. Hynard, is that when you have
8 regard to the smallness of the proportion that the
9 overall manual and mechanical tending program bears to
10 the overall tending program, it is costing at least
11 twice as much?

12 A. Yes.

13 Q. Okay.

14 MS. CRONK: Sorry for that, Mr. Chairman,
15 but I thought I better correct it.

16 MR. HYNARD: You will recall this morning
17 I undertook to find out the overall tending funding
18 levels to determine whether or not funding was the
19 cause for the decline in manual tending.

20 MS. CRONK: Q. Yes.

21 MR. HYNARD: A. And I have some figures
22 for you.

23 Q. Please, go ahead.

24 A. How would you like me to deal with
25 these?

1 Q. Perhaps I will just hand them to the
2 Board and they can assign them a number?

3 A. There are 14 copies there. (handed)

4 MS. CRONK: (handed) Thank you.

5 THE CHAIRMAN: Thanks. This will be
6 Exhibit No. 654.

7 ---EXHIBIT NO. 654: Graph prepared by Mr. Hynard
8 representing tending funding
9 in four northern regions for
10 1988-89 (actual) and 1989-90
11 (estimate).

12 MR. HYNARD: You recall, Mr. Chairman, we
13 were discussing the role that the tending north and
14 tending south funding programs played in achieving
15 higher levels of manual cleaning during 1985-86 and
16 1986-87, and the fact that those programs no longer
17 exist.

18 And I stated that one should not
19 necessarily be drawn to the conclusion that the overall
20 amount of tending funding has declined.

21 The graph that I have just distributed to
22 you shows in fact that that did occur, there was a drop
23 in tending funding in 1987-88.

24 These figures represent the amount of
25 dollars that were spent on tending in northern Ontario,
and the last two years on the graph 88-89 and 89-90 are
estimates rather than actual expenditures.

1 And this doesn't represent the entire
2 area of the undertaking, it's for the four northern
3 regions, but it certainly does represent a trend.

4 THE CHAIRMAN: Would there be a
5 corresponding decrease for that 87-88 in southern
6 Ontario -- in the other regions rather?

7 MR. HYNARD: I'm not sure if they shared
8 the same decrease during those years, but their
9 influence over the total would not be enough to bring
10 that curve back up to its full height in that year.

11 THE CHAIRMAN: Thank you.

12 MS. CRONK: Thank you, Mr. Hynard.

13 Q. I turn now then to the topic of
14 herbicides use generally and --

15 MR. FREIDIN: I'm just wondering whether
16 Ms. Krishka could have her exhibit book returned to
17 her.

18 MRS. KOVEN: (handed)

19 THE CHAIRMAN: Whose was this?

20 MS. CRONK: That was Mr. Freidin's, Mr.
21 Chairman. (handed)

22 MS. CRONK: And there is one up there of
23 ours.

24 THE CHAIRMAN: Okay. Which one is yours.
25 This one? (handed)

1 MS. CRONK: Q. Ms. Krishka and Mr.
2 Galloway, could I ask you to return to Exhibit 651
3 which is the extract from the Walstead text that we
4 looked at earlier this morning.

5 And dealing with the general issue of the
6 use of herbicides for vegetation management, I would
7 ask you to go to page 174 and I direct your attention
8 to the paragraph beginning under the caption:
9 "chemical methods", which begins with an indication
10 that:

11 "The use of herbicides as a site
12 preparation tool is generally for the
13 sole purpose of controlling competing
14 vegetation."

15 Do you see where I am, Ms. Krishka?

16 MS. KRISHKA: A. (nodding affirmatively)

17 Q. And I'm going to suggest that in the
18 succeeding paragraph and over on to the next page the
19 authors suggest a number of advantages attributable to
20 the use of herbicides for site preparation and control
21 of competition purposes.

22 The first is suggested at the bottom of
23 page 174 in which the authors indicate:

24 "The efficacy of herbicides in
25 controlling weeds makes them ideally

1 suited for many site preparation
2 situations where competing vegetation
3 poses a threat to conifer reforestation
4 efforts. No other methods are capable
5 of providing comparable control of both
6 sprouting residuals and invading
7 germinants without considerable soil
8 disturbance. The survival and growth
9 response of conifer regeneration can be
10 greatly enhanced by such treatments."
11 Now, stopping there, Ms. Krishka. In
12 light of the literature review which you undertook for
13 the purposes of giving your evidence and in light of
14 your experience, do you agree with the suggestions made
15 in that paragraph?

16 A. Yes, I would agree with them.

17 Q. All right. Mr. Galloway?

18 MR. GALLOWAY: A. Yes, I would agree.

19 Q. The authors then go on to suggest
20 that another advantage of chemical site preparation is
21 that it can be used essentially on sites that may
22 present conditions which will be difficult to treat in
23 other ways.

24 Do you agree with that as a general
25 proposition, Mr. Galloway?

1 A. Yes, generally.

2 Q. And then in continuing on in the same
3 paragraph it is suggested that:

4 "Chemical site presentation does not
5 physically disturb the site and, in
6 consequence, there are no significant
7 long-term impacts on inherent site
8 productivity associated with its use as
9 long as recommended application rates are
10 used."

11 Is that, in your experience, Ms. Krishka,
12 a suggested advantage of the technique with which you
13 would agree?

14 MS. KRISHKA: A. Yes, I would.

15 Q. And in the fourth paragraph it's
16 suggested:

17 "On sites where clearing of residual
18 vegetation and disposal of slash are
19 necessary and appropriate, herbicide
20 treatments are often a cost effective
21 adjunct to burning and mechanical
22 treatments."

23 The authors go on to suggest that:

24 "The use of herbicides in fact affords
25 versatility to the timber manager."

1 Do you agree with those suggestions, Ms.
2 Krishka, and do you perceive them to be advantages of
3 the use of herbicides?

4 A. Yes, I would agree with them and they
5 could be advantages under those circumstances.

6 Q. Mr. Galloway?

7 MR. GALLOWAY: A. Yes.

8 Q. All right. Ms. Krishka, could I ask
9 you particularly to go over to the next page of the
10 extract, page 448, and in a section dealing with the
11 benefits of vegetation management, and you will see
12 that in the first paragraph under that topic the
13 authors are referring to:

14 "An extensive..."

15 What they describe as:

16 "An extensive review of published and
17 unpublished studies by Stewart, et al on
18 the effects of competing vegetation on
19 forestry in the United States and
20 Canada."

21 And indicate that the results of that
22 literature review indicate that:

23 "Release from competing vegetation by the
24 use of herbicides can and has been
25 documented to result in increased volume

1 of growth of trees in significant
2 percentages."

3 All right. First of all, are you
4 familiar with the Stewart literature review that is
5 being referred to here?

6 MS. KRISHKA: A. Yes, I am and it was
7 referenced in my evidence.

8 Q. All right. And insofar as your own
9 literature review and evidence is concerned, do you
10 agree that increased volume growth of between 40 to a
11 hundred per cent or more in the short term following
12 herbicides treatment is recorded and documented in the
13 literature as a result of herbicides treatment?

14 A. Yes.

15 Q. All right, thank you. Dr. Campbell,
16 I wonder if I might address my next questions to you,
17 sir.

18 We have heard in your evidence that under
19 the current regulatory system at both the federal and
20 provincial level in Ontario, there are essentially five
21 herbicides authorized and registered for use in
22 forestry applications and you have told us, to refresh
23 our memories, that they are 2,4-D, glyphosate,
24 picloram, simazine, and the one I have difficulty
25 pronouncing...?

1 DR. CAMPBELL: A. Hexazinone.

2 Q. That's right. Are those the five?

3 A. That is correct.

4 Q. All right. And of those, am I
5 correct that only two, 2,4-D and glyphosate, are
6 registered and authorized for aerial application use?

7 A. That is correct.

8 Q. All right. And is it also correct
9 that glyphosate has only been available since
10 approximately 1984?

11 A. It has only been registered for
12 forestry use in Canada since 1984.

13 Q. All right. 2,4-D in contrast has
14 been available for 20 years or so for forestry
15 application?

16 A. We have been using it for probably 34
17 years now.

18 Q. 34 or 30 to 40?

19 A. 34.

20 Q. Thank you. And during the course of
21 your evidence, Dr. Campbell, you put a series of
22 overheads, exhibits in which were intended in part, as
23 I understood you to say, to address the issue of
24 herbicide use in perspective. You will recall Exhibit
25 619--

1 A. Yes.

2 Q. --which is your series of overheads.

3 And you compared, for example, the forestry use of
4 herbicides versus other uses, including agriculture.

5 Do recall that?

6 A. Yes.

7 Q. All right. Could I ask you to go to
8 OFIA Interrogatory No. 5 on Panel 14 -- sorry, Panel
9 12, I beg your pardon, Exhibit 649.

10 And perhaps so that people don't have to
11 reach further for the paper, am I correct, Dr. Campbell
12 that in that interrogatory you and your colleagues were
13 asked to indicate and identify the herbicides
14 registered for use in Ontario for agricultural as
15 distinct from forestry purposes -- forestry use
16 applications?

17 A. That's correct.

18 Q. And the answer, I suggest, is set out
19 in sub-paragraph (b) and it indicates first that the
20 respondent thought the request of limited relevance and
21 that it was inappropriate to search for and list the
22 information, but then went on to suggest that one
23 source of the information was the Guide to Weed
24 Control, Ontario Ministry of Agriculture and Food
25 Publication No. 75.

1 Is that correct?

2 A. That's correct.

3 Q. Are you familiar with that
4 publication, Dr. Campbell?

5 A. Yes. I, in fact, am one of the
6 authors of it.

7 Q. I am going to show you an extract
8 from that publication, Dr. Campbell, and I would ask if
9 you could identify it, please?

10 MS. CRONK: (handed)

11 THE CHAIRMAN: Thank you. Exhibit No.
12 655.

13 ---EXHIBIT NO. 655: Extract from Guide to Weed
14 Control, Ontario Ministry of
15 Agriculture and Food, Publication
No. 75.

16 MS. CRONK: Q. Dr. Campbell, this is an
17 extract from that publication; is it not?

18 DR. CAMPBELL: A. This is a table which
19 is referred to as Table 1.

20 Q. From that publication?

21 A. From Guide to Chemical Weed Control
22 commonly known as OMAF, Publication 75.

23 Q. Thank you. And am I correct that
24 Table 1 sets out in alphabetical order the herbicides
25 used in Ontario for agricultural purposes?

1 A. Yes, it does. But I should point out
2 that the way the table is set out here, it lists all of
3 the product names as well as the active ingredients.
4 So you have a very long list here which does not
5 necessarily represent the total number -- or it is a
6 larger number than the actual number of products or
7 active ingredients.

8 Q. All right. Would you have any idea
9 as a participant in the publication what that
10 proportion is?

11 A. Actually when I saw that you had
12 filed that interrogatory I went through the next
13 section in that publication which was called Notes on
14 Chemicals, and that is the list of the chemicals on the
15 basis of the active ingredient, and I just did a quick
16 count of the number of different active ingredients
17 which had agricultural registrations.

18 Q. That's fine. How many were there,
19 Dr. Campbell?

20 A. 54.

21 Q. Thank you.

22 A. I feel that's more relevant than
23 counting up the number in Table 1.

24 Q. That's fine, thank you. And
25 similarly in OFIA Interrogatory No. 5, a request was

1 made that some indication be given as to the number of
2 herbicides authorized for use in the United States for
3 forestry purposes and a similar answer was given, the
4 information was not provided.

5 Are you personally familiar -- and let's
6 take, for example, the State of Maine or the Great Lake
7 states, Dr. Campbell. Are you familiar with the
8 forestry conditions in general terms in those areas of
9 the United States?

10 A. Basically, yes.

11 Q. All right. Can we agree as a general
12 matter that there are a significantly larger number of
13 herbicides authorized for use in those jurisdictions
14 than there are in Ontario for forestry applications?

15 A. I cannot speak specifically on a
16 state basis because the states of course can do the
17 same thing as the provinces, they can -- it is possible
18 for them to, you know, be more restrictive. But
19 certainly there are many more herbicides registered for
20 forestry in the United States than in Canada.

21 Q. With respect particularly to the
22 Great Lakes states and the State of Maine, let's deal
23 with the latter first, are you sufficiently familiar
24 with the forestry conditions in that state to express
25 an opinion in general terms as to whether it is similar

1 to the conditions found in the area of the undertaking?
2 If you are not, that's fine.

3 A. Certainly they have a lot of the same
4 conditions in terms of -- whether they all are, it may
5 be better -- Mr. Hynard or Mr. Galloway, your thoughts.

6 (no response)

7 Q. No. All right, thank you. The
8 question was also raised with you, Dr. Campbell, during
9 your evidence of the potential implications or
10 potential effect of the sequential application of
11 herbicides where used for forestry purposes. Do you
12 recall that issue being raised?

13 A. Yes.

14 Q. All right. I believe it was during
15 your evidence. Are you aware, Dr. Campbell, of any
16 evidence to suggest that adverse effects can result
17 from the sequential application of herbicides in
18 forestry use circumstances?

19 A. No, I am not.

20 Q. In general terms, what are the -- and
21 in general terms only, what are the persistence
22 characteristics of the herbicides that are authorized
23 for use in forestry applications in Ontario?

24 A. Generally speaking the herbicides are
25 what we would call not particularly persistent.

1 Certainly hexazinone and simazine you will have -- will
2 still be detectible and have some biological effect a
3 couple of years after application.

4 But one of our points in terms of the
5 adverse effect of -- or synergism, if you will, of
6 using two different herbicides, to have the synergism
7 you have to have the two there at the same time, and
8 generally a situation would be one herbicide is applied
9 and if a second application is required - which it
10 certainly isn't in all cases - it would probably be at
11 least two years later, at which time we would expect
12 very little residue from the first herbicide to be
13 present.

14 Q. When you say at least two years later
15 is that because, for example, Dr. Campbell, if you
16 chemically site prepared in year one and followed that
17 with planting in year two and then elected to tend, the
18 tending would occur at least at the earliest in year
19 three?

20 A. That's correct, particularly in the
21 case of glyphosate because we know that the crop trees
22 are usually not tolerant in the year that they are
23 planted, even if you wait until the latter part of the
24 season.

25 Q. And what is the implication of that

1 in this context?

2 A. Well, the implication there, I think
3 as I was pointing out in my direct evidence, was the
4 fact that if you were in a situation where you thought
5 competition or believed that competition was going to
6 develop very rapidly, say in the same year that you
7 planted, you would not have the option of doing a
8 chemical release treatment soon enough and so that
9 would be a case where chemical site preparation should
10 be done.

11 Q. All right. So that in the scenario
12 that I have put to you, you are looking at, as you
13 suggested, a minimum two year elapse of time between
14 the original application of herbicide for site prep and
15 the hypothetical subsequent one for tending?

16 A. Generally speaking. I mean, it is
17 possible you could get a situation where you made an
18 application one year and say, for example, there was a
19 very heavy rain immediately after the application was
20 made, the treatment was completely ineffective and had
21 to be repeated the following year.

22 Q. Would you agree with me, Dr.
23 Campbell, that having regard to the persistence
24 characteristics of the herbicides which in fact are in
25 use for forestry purposes in Ontario and the shortness

1 of time over which they dissipate in that context, that
2 the hypothetical situation of sequential applications
3 of herbicides would be unlikely to produce an adverse
4 synergistic effect?

5 A. Yes.

6 Q. Thank you.

7 MS. KRISHKA: A. Ms. Cronk, if I could
8 add something to an earlier question of yours with
9 regards to usage in the Lakes states of herbicides.

10 Q. Yes.

11 A. I am familiar with a recent report
12 from Minnesota and in that report they reported
13 herbicides used for forestry as in the area of 37
14 different herbicides.

15 Q. Thank you.

16 A. That would be herbicide
17 formulations.

18 Q. Thank you. Thank you very much, Dr.
19 Campbell.

20 Mr. Galloway, could I ask you to go, if
21 you would please, to Exhibit 621.

22 MS. CRONK: Which is the exhibit, Mr.
23 Chairman, dealing with complaints.

24 Q. And you will need, Mr. Galloway,
25 Exhibit 621 dealing with complaints, Exhibit 440

1 dealing with recordable and reportable incidents and
2 Exhibit 622 dealing with injuries. We better use 622A.

3 Dealing first, Mr. Galloway, with Exhibit
4 621, the complaints document, as I understand it this
5 applies -- perhaps you could indicate: Does this apply
6 to both insecticides and herbicides and complaints
7 relating to both in the years 1984 to 1988?

8 MR. GALLOWAY: A. Yes, it does.

9 Q. All right. And did this involve a
10 review of information received from all district
11 offices?

12 A. Yes, it did.

13 Q. All right. And how many then were
14 involved in responding?

15 A. I don't have -- in total we have 47
16 districts. There was some nil responses.

17 Q. All right.

18 A. I don't know the exact number of the
19 ones that did respond.

20 Q. All right, thank you. Could I ask
21 you to go please to the second page of the Exhibit 621
22 and to the section of it which describes the results or
23 resolution of the complaints received.

24 And in the first line you indicate,
25 resolved 80 or 86 per cent. Can you help me as to what

1 the 80 or 86 per cent is?

2 A. Yes.

3 Q. Isn't it one or the other--

4 A. No.

5 Q. --or is it both? Or what is it?

6 A. 80 of the 93 complaints were resolved
7 and that's 86 per cent of the total received.

8 Q. And if you could leave that in front
9 of you, Mr. Galloway, and go if you would please to
10 Volume I of the Panel 13 evidence, page 315.

11 Set out at those pages, 315 and
12 following, is what is described as a pesticide incident
13 report?

14 A. Yes.

15 Q. Are you familiar with these reports?

16 A. I have seen them, but Mr. Nicholson
17 is certainly more familiar.

18 Q. All right. Mr. Nicholson, if I could
19 direct my questions to you then, sir. I would like
20 your assistance to ensure that I am interpreting the
21 provisions of the reporting form correctly, Mr.
22 Nicholson.

23 In the first paragraph under Pesticide
24 Incident it indicates that:

25 "Pesticide incidents or that term

1 include all occurrences involving the
2 public or bystander exposure. All
3 incidents shall be recorded and reported
4 upon to the project supervisor
5 immediately."

6 Stopping there for a moment, am I to take
7 fairly from that, Mr. Nicholson, that any complaint,
8 incident, occurrence, activity involving the public or
9 bystander exposure to pesticides is required under this
10 reporting requirement to be reported in writing in a
11 pesticide incident form?

12 MR. NICHOLSON: A. That's correct.

13 Q. All right. Would that be so whether
14 the complaint was received orally, by telephone or in
15 writing?

16 A. I believe if there was a verbal
17 complaint or comment there would be a note made of it.

18 Q. All right. And in your view would
19 that be required under the terms of this reporting
20 documentation? Would it be required that a note be
21 made if it was that type of complaint?

22 A. It would depend on the query. If it
23 was just a question in terms of where are you spraying
24 or a general inquiry, it wouldn't necessarily require
25 an incident reporting format. But a note of that would

1 be made that there was a query such as you see in the
2 documented complaints or comments.

3 Q. All right. If it involved any
4 suggestion that a bystander or bystanders had been
5 exposed to pesticides would it, in your view, under
6 this reporting requirement require a written report?

7 A. Guaranteed.

8 Q. And would that be so even if it was
9 received or if the first information of it was received
10 in an oral communication of some kind, by telephone?

11 A. I would believe as much.

12 Q. All right. And in your view is that
13 what is required by the reporting requirement?

14 A. Yes.

15 Q. And reading on in that paragraph, it
16 indicates that a reportable incident is considered:

17 "As having adverse environmental health,
18 safety or communications implications and
19 are to be reported to appropriate
20 authorities; i.e., MOE, MOL or the
21 Medical Officer of Health."

22 Now, just dealing with that language, Mr.
23 Nicholson, does that mean any, again, complaint,
24 occurrence, incident, communication received that is
25 considered as having any of an adverse environmental

1 implication, a health implication, a safety implication
2 or a communications implication is to be recorded in
3 writing?

4 A. Yes.

5 Q. And would that be so if the complaint
6 or the first knowledge of it came forward in an oral
7 communication by telephone as opposed to a written
8 letter or a written complaint of some kind?

9 A. Yes.

10 Q. Are you familiar with the practices
11 in the field at the various district offices as they
12 relate to this reporting requirement?

13 A. I am generally familiar, yes, but I
14 have never had any specific district experience.

15 Q. All right. Can Mr. -- Mr. Galloway,
16 can you help me with that? Have you had any district
17 experience with respect to the compliance or lack
18 thereof--

19 MR. GALLOWAY: A. Yes.

20 Q. --with this reporting requirement?

21 A. Yes.

22 Q. All right. And you have heard what
23 Mr. Nicholson said as to what is required by the
24 policy. In your experience, is that in fact the way it
25 is applied in the field?

1 A. Yes, definitely.

2 Q. Relating that then to Exhibit 621,
3 which is the complaint summary that you and Mr. Buss
4 put together based on the replies from the various
5 district offices, you had indicated in your
6 evidence-in-chief that this did not include, you
7 thought, oral communications received by telephone.

8 Am I correct, or it may not?

9 A. Yes. And my reference to that was
10 not a reportable incident or hint of exposure but one
11 where someone might just request information, that type
12 of recording.

13 Q. All right. Well, had any oral
14 communications of that kind involved matters of the
15 nature described in the Pesticide Incident Report that
16 we have looked at, would it be your expectation that
17 they would have been formalized in a written complaint
18 documentation of some kind?

19 A. Yes, that would be my expectation.

20 Q. All right. And is it appropriate to
21 relate the term reportable incident as it is used in
22 the Pesticide Incident Report that we are now looking
23 at to that term as it is used in Exhibit 640, being the
24 number of recordable and reportable incidents on MNR
25 project operations in the area of the undertaking?

1 Are we talking about the same thing?

2 MR. NICHOLSON: A. Yes. Yes, we are.

3 Q. All right. Then dealing with Exhibit
4 640, can you help me as to which of the panel members
5 assisted in the preparation of this documentation or is
6 familiar with it?

7 Mr. Galloway, are you? Mr. Nicholson?

8 MR. GALLOWAY: A. No, I'm not.

9 MR. NICHOLSON: A. I'm not familiar with
10 it either.

11 Q. All right. Is there anyone who can
12 speak to the information contained in this exhibit?

13 (no response)

14 All right. Well, Mr. Galloway, could I
15 ask to you to look at it in this context and if you are
16 unable to answer the question, please feel free to
17 indicate. As I -- do you have 640 in front of you?

18 MR. GALLOWAY: A. Yes.

19 Q. All right. As I understand the first
20 page of that document, it indicates that in the eight
21 years from 1980 to 1988 a total of some 55 recordable
22 and reportable incidents on MNR pesticide operations
23 are documented. Am I correct, a total of 55?

24 A. 56 is the number on the bottom of
25 June the 6th, '89, is that correct?

1 Q. Mine bears a date of May 31st. All
2 right. So it is 56 incidents of that type in that
3 eight-year period?

4 A. Yes.

5 Q. Okay. Can you relate that for me
6 please to the total number of hectares treated with
7 herbicides first and then insecticides during that same
8 eight-year period of time, or would you undertake to
9 provide me with those figures if you don't have them
10 readily available?

11 A. Yes, I think we could provide them
12 after the break.

13 Q. Am I interpreting this correctly, Mr.
14 Galloway, that it does apply to both herbicides and
15 insecticides?

16 A. Yes, that's correct.

17 Q. All right. Then I would ask you, if
18 you could please, to provide me with the total number
19 of hectares in that eight-year period treated with
20 herbicides?

21 A. I might state that I'm not sure if we
22 can get the eight years covered totally, but we can get
23 an approximation of it --

24 Q. I am sorry, sir.

25 A. For instance, in the herbicide part

1 of it, we definitely have in the interrogatories
2 answered those years covered.

3 Mr. Churcher, would we have the same for
4 the insecticides?

5 MR. CHURCHER: A. Yes, during the break
6 I can compile similar figures for insecticides for the
7 years '80 to '88.

8 Q. Thank you very much. And then moving
9 to the Exhibit 622A, as filed this morning, this is the
10 number of recorded injuries in the same period,
11 1980-1988 and days of lost time.

12 Based on the revised version of the
13 document that's been filed, Mr. Galloway, can you
14 confirm for me that there were eight reported injuries
15 involving chemical tending operations during that
16 entire eight-year period?

17 MR. GALLOWAY: A. That's correct.

18 Q. And of those -- that compares to some
19 112 such reported injuries with respect to manual
20 cleaning operations -- actually manual tending
21 operations including manual cleaning?

22 A. Yes, that's correct. And that
23 exhibit being only on the MNR projects--

24 Q. Yes.

25 A. --in that period.

1 THE CHAIRMAN: Would you not agree that
2 some of those injuries, several of them, would not
3 necessarily relate specifically to tending?

4 I mean, you could walk through the woods
5 and get a bee sting or you could, you know, just be
6 there and suffer a scratch or something like that.

7 Is the reason that they are all recorded
8 simply because they physically occurred during the time
9 that the person was there specifically to conduct
10 tending activities?

11 MR. GALLOWAY: Yes. These type of
12 injuries would be reported just as a matter of course
13 on those projects and the minor ones, like you say, a
14 bee sting, a scratch, would be reported in case it
15 turned out serious later.

16 And that's why you would have the lost
17 time injury as a better indication of seriousness of
18 injury. But if you don't record those, then the person
19 being injured has no record in practice of, yes, I did
20 get injured on the job.

21 THE CHAIRMAN: And that is as much for
22 compensation-type situations as well?

23 MR. GALLOWAY: Yes, that's the project
24 reporting system we reviewed, for instance, to gather
25 that information.

1 MS. CRONK: Q. And during that same
2 period of time, Mr. Galloway, according to the revised
3 front page of the exhibit, am I correct that a total of
4 nine lost days is recorded as being associated with
5 chemical-related injuries during that eight-year period
6 of time, nine days?

7 MR. GALLOWAY: A. Yes, that's correct.

8 Q. And that compares to some 354 for
9 manual operations?

10 A. Yes, that's correct.

11 Q. And if we went through the back-up
12 description of these various injuries, am I
13 interpreting this correctly that of the nine days
14 attributable to chemical incidents, the entire nine
15 days were associated with a bone injury, either a
16 broken ankle or a sprained back, bone injuries - the
17 doctor might quarrel with that - they were associated
18 with an ankle or a sprained back injury?

19 A. Yes, that's correct.

20 Q. And that accounts for the full nine
21 days of lost time suffered by the workers recorded in
22 these incidents or dealt with in these incidents?

23 A. Yes.

24 Q. Thank you very much.

25 MR. CHURCHER: A. Ms. Cronk, if I could

1 just ask for a clarification of the undertaking that
2 Mr. Galloway and I have assumed.

3 Q. Yes.

4 A. You would like the area treated
5 aerially by insecticides and herbicides separately from
6 the years 1980 to '88.

7 And did you also request that the total
8 number of incidents, I believe 56 -- did you want that
9 separated by insecticides and herbicides as well?

10 Q. I didn't ask for that. What I am
11 trying to do, Mr. Churcher, so that you understand, is
12 I would like to know how those numbers relate -- how
13 the number of incidents, the 56, relate in the context
14 of how many hectares were in fact being dealt with
15 during that period of time.

16 Would it be more appropriate, in your
17 view, to be providing us with information as to the
18 number of actual applications, if we can get at it that
19 way?

20 A. No, no, hectares is fine. I just
21 wanted to be sure that I understood what you wanted.

22 Q. That's fine. All right, thank you.
23 Are the number of applications readily available?

24 A. No, that would be much more involved.

25 Q. All right. Ms. Krishka, could I ask

1 you to go, if you would then please, to Exhibit 628
2 which is one of the two recently published articles
3 which you co-authored reporting upon the results of
4 some herbicidal spray operations conducted.

5 Do you have that, Ms. Krishka?

6 MS. KRISHKA: A. Yes.

7 Q. All right. You took the Board in
8 your evidence to the data depicted in Figure 2 at page
9 5 of this exhibit, amongst other data in the document,
10 but in particular with respect to Figure 2 there was
11 some discussion.

12 Am I correct that the data set out in
13 this form in Figure 2 relates to stand structure, if I
14 could put it this way, changes in stand structure, it
15 compares the prominence of suppressed trees after
16 treatment to dominant trees three years after tending?

17 A. Yes, I think that describes it quite
18 well. It shows the relative position of the crop trees
19 in relation to other vegetation.

20 Q. And portraying the results in this
21 fashion is intended; is it not, to give an indication
22 at a particular point in time, three years after
23 tending, of what trees were dominant?

24 A. Yes.

25 Q. All right. Could I ask you to go if

1 you would then to Tables 4 and 5 at page 10, the next
2 page of the exhibit. And am I correct that the data
3 set out in these tables relates to something different,
4 it relates to the volume response after treatment of
5 the trees that were subject to the treated and control
6 plots?

7 A. That's correct.

8 Q. All right. And if we look first at
9 Table 4, that relates -- am I correct that that relates
10 to the pre-treatment volume characteristics of the
11 trees in the three specified locations both those that
12 were ultimately treated and the control plots; in other
13 words, it's the before side?

14 A. That's correct.

15 Q. All right. And Table 5 conversely is
16 the post-treatment results?

17 A. That is correct.

18 Q. All right. And am I correct that
19 volume, as a concept of response to treatment, is
20 really the integration of both height and diameter
21 standards; it's both?

22 A. Yes. The function of volume is --
23 volume itself is a function of both height and
24 diameter.

25 Q. Right. So that if when we look at

1 height response for example, or diameter response for
2 example, while we are getting useful response
3 information, it is part of a larger concept; that being
4 volume?

5 A. That is correct.

6 Q. All right. And looking then, I would
7 ask you, if you would please, to look at the
8 post-treatment results set out in Table 5 dealing with
9 volume and could we deal with each of the three areas
10 where the results are reported and could we deal first
11 with Man Lake, Item B?

12 A. Okay.

13 Q. Now, without getting into the
14 mathematics of it - I have some timidity this afternoon
15 about that after this morning - am I right that in
16 general terms the volume response indicated by these
17 data results shows that the response of the treated
18 trees was almost double that of those that were
19 untreated in the control plot?

20 A. That's correct. The numbers that
21 indicate that are in the row -- in the column right
22 below the word 'mean'. In Man Lake it shows that the
23 trees in the control area had a mean post-treatment
24 volume of 3.41, and the trees in the treated area had a
25 mean post-treatment volume of 5.72.

1 Q. And can we --

2 A. And that is about twice as much.

3 Q. Sorry. Can we relate that as well to
4 what the condition was before they were treated, can we
5 go back up to Table 4 and take those results and relate
6 it to what the volume situation was before treatment?

7 A. Yes. If we look at the same column,
8 in Man Lake the pre-treatment volume in the control
9 area was 0.79 and the pre-treatment volume in the
10 treated area was 0.75.

11 So what that tells us is that there was a
12 slightly lower mean volume prior to treatment in the
13 treated area, but the difference is insignificant
14 statistically.

15 Q. All right. In the comparison though
16 of what the volume results were following treatment, it
17 does show in before and after terms a significant
18 improvement in volume; does it not?

19 A. Yes, it does.

20 Q. And with respect to Janet Lake, am I
21 correct that again there is an increase in volume
22 following treatment but not as much as there was in the
23 case of Man Lake?

24 A. I'm sorry, could you repeat that
25 question?

1 Q. Yes. Janet Lake, I'm looking at
2 Table 5 in the post-treatment results column, and I'm
3 suggesting to you that there was again, when we look at
4 the before and after volume comparisons, again there
5 was an improvement in the volume after treatment but
6 not quite as much as Man Lake, or am I misinterpreting
7 the data?

8 A. Well, there was a volume increase.
9 It's difficult to compare it to another plantation
10 because they are quite different. I guess if you just
11 looked at the numbers you would see that in Man Lake
12 there looked to be about a twofold increase and in
13 Janet Lake about a threefold increase. So if you look
14 at it just that way, there was a greater increase in
15 Janet Lake.

16 Q. All right. And just looking at the
17 Janet Lake situation, it's clear that there was a
18 significant improvement following treatment in
19 measurable volume terms?

20 A. Yes.

21 Q. All right. And what was the
22 situation with respect to Snowflake Lake?

23 A. The same.

24 Q. Just dealing, Ms. Krishka, further
25 with this concept of what data was available to you

1 before treatment as distinct from measuring results
2 after treatment, could I ask you to go, if you would
3 please, to the bottom of page 3 I believe -- yes, page
4 3.

5 And I would direct your attention to the
6 second last paragraph on page 3 which reads in the
7 first sentence:

8 "Each of the planted spruce were assessed
9 for
10 dominance with respect to the surrounding
11 vegetation, total height and current
12 annual height
13 increment prior to treatment and in the
14 subsequent
15 1984, '85 and '86 growing seasons."

16 Now, am I interpreting that statement
17 correctly if I suggest that it means that before any
18 treatment occurred there was actually an assessment or
19 a survey done with respect to the dominance
20 characteristics of the trees; that is No. 1?

21 A. Yes.

22 Q. Secondly, with respect to their total
23 height?

24 A. Yes. And I think perhaps I could
25 clarify that, there was an initial assessment and plots

1 that had been established by the district just prior to
2 the treatment at which time they had also delineated
3 the control or the check area which was not treated and
4 prior to the treatment and for the three years
5 following the treatment, they measured those parameters
6 that you just mentioned; dominance, and total height
7 and current annual height increment.

8 In 1986 we went in and established
9 different plots in the same area to determine volume
10 because it required disruptive sampling and we couldn't
11 destroy the initial plots.

12 Q. All right. I'm going to stop there
13 for a moment. When were these plots treated, in what
14 year?

15 A. In 1983.

16 Q. Okay. Before their treatment in
17 1983, am I correct that you had data available to you
18 regarding the characteristics of the stand, the trees
19 with respect to a number of parameters; dominance,
20 total height, incremental height?

21 A. Right.

22 Q. You did not have it for volume?

23 A. No.

24 Q. How did you get the before picture
25 for volume that we looked at in Table 4 on page 10?

1 A. The method that we use for
2 determining volume requires destructive sampling and a
3 lab analysis that is referred to as trim - that stands
4 for tree ring increment measuring system - and by doing
5 that you essentially determine the height.

6 You take cuttings at various points up
7 the length of the trees so you know at what height you
8 took your section, and then the trim system measures
9 the width of the diameter and through that you have
10 both height and diameter and you can calculate the
11 volume. Since you are destructively sampling the
12 trees, you can actually go back in time.

13 Q. So I take it then that by use of that
14 technique you can work your way back and calculate what
15 the volume was prior to treatment?

16 A. That's correct.

17 Q. And is that what you did in this
18 case?

19 A. Yes, we did.

20 Q. All right. And is that, in your
21 experience, an accepted practice or a manner of
22 calculating volume for the purposes of studies of this
23 kind, or was it experimental?

24 A. No, it's relatively common.

25 Q. Thank you very much.

1 Mr. Galloway, could I come back to you,
2 please. Given the importance of herbicides to the
3 total tending operations of the Ministry in the area of
4 the undertaking, and we have seen what that means in
5 terms of proportion, but given the importance of
6 herbicides in that context, would you agree with me
7 that it is important that suitable herbicides remain
8 authorized for use by timber managers in the area of
9 the undertaking for forestry applications?

10 MR. GALLOWAY: A. Yes, I would agree
11 with that.

12 Q. Would you be prepared to go so far as
13 to suggest that it is essential?

14 A. Yes, in my opinion it's essential to
15 be able to achieve and maintain those tending, cleaning
16 release treatments.

17 Q. Now, as I understand the concept of
18 the evidence that this panel has given with respect to
19 the selection of tending options, am I correct in my
20 understanding that what the Board is really being told
21 is that in any given site situation there may be a
22 number of options available and that an assessment has
23 to be done as to which is the most appropriate in those
24 circumstances, in the circumstances of the particular
25 site?

1 A. Yes.

2 Q. All right. But that as you move from
3 site to site, the nature of the options available may
4 vary?

5 A. That's correct.

6 Q. In fact will vary?

7 A. Will vary almost always.

8 Q. Right. Would you agree with me that
9 within the chemical family, if I could put it that way,
10 within the range of options available for chemical
11 tending for example, it is to the advantage of the
12 professional forester to have as large a range of
13 chemical options available as possible?

14 A. Yes. As Mr. Campbell said, it helps
15 and assists in the finesse and use of achieving the
16 objectives of the treatment.

17 Q. All right. Well, Dr. Campbell,
18 perhaps we could deal with that now that it has been
19 raised, because I made a note of the finesse attribute
20 suggestion that you made and I have some difficulty
21 with that and it may be a lack of understanding on my
22 part.

23 But would you agree, as Mr. Galloway has
24 now, that within the context of the chemical options
25 that are available or the chemical treatment as an

1 option, that it is advantageous to a professional
2 forester to have chemical options available as many as
3 possible?

4 MR. CAMPBELL: A. Yes.

5 Q. All right. And when you spoke about
6 finesse, or being able to use herbicides or chemical
7 options with finesse, what did you mean?

8 A. Well, the type of situation that we
9 talk about, let's just for example take 2,4-D and
10 glyphosate. We know that glyphosate, for example, will
11 control say grass.

12 If you have a particular site on which
13 the only significant competition is, for example, say
14 birch and pin cherry you can use 2,4-D to control that
15 and you will not control the grass.

16 If you were forced to simply use
17 glyphosate you would be controlling the grass - which
18 you don't really need to - and the grass might be
19 useful in terms of wildlife habitat.

20 THE CHAIRMAN: Dr. Campbell and Mr.
21 Galloway, are your answers to Ms. Cronk's previous set
22 of questions predicated on the fact that, in your view,
23 that will be the case if there were no adverse impacts
24 to human health or wildlife in general?

25 DR. CAMPBELL: Would you repeat that

1 again, I'm not quite sure...

2 THE CHAIRMAN: Your questions had
3 indicated that it is important that certain herbicides
4 remain in use within the area of the undertaking for
5 forest management, and going even further, I think Mr.
6 Galloway indicated that in his view the use of those
7 herbicides might be considered essential.

8 Is that predicated on the fact that those
9 herbicides are considered to be free from adverse
10 effects on human health or adverse effects to wildlife?

11 DR. CAMPBELL: Yes, that is.

12 THE CHAIRMAN: And would your answers to
13 those questions change if that were not the case?

14 DR. CAMPBELL: Well, in turn, we
15 certainly would not be interested in or advocate using
16 any herbicides which did represent a human health
17 hazard or a significant environmental adverse effect.

18 MR. GALLOWAY: In the same sort of vein,
19 remember in the direct evidence that I put in where you
20 had -- evaluated the options, one of those
21 considerations was the environmental side and we are
22 going to hear more of that obviously, but all of those
23 options are evaluated and any one may preclude the use
24 of the option.

25 Like, if there was an environmental

1 hazard or if the cost was so high in some cases, so
2 that there is reasons that definitely would eliminate
3 the choice of options.

4 THE CHAIRMAN: Okay.

5 MS. MURPHY: And I think just -- I think
6 it's pretty clear from our argument that was made
7 earlier that all of this is pre-supposed on the
8 products that are used being registered.

9 MS. CRONK: I think we are all aware of
10 the position of the Ministry on that issue.

11 Q. Perhaps I could put the suggestion to
12 you more clearly. My questions were directed, at least
13 in part, to the issue of the need for continuing
14 research and development of silvicultural herbicides.

15 And what I'm suggesting to you is that
16 conceptually as a professional forester, given your
17 knowledge of and experience with herbicides in the area
18 of the undertaking, is it not better to have available
19 to you as a tool available to treat lands and the
20 timber resource in the area of the undertaking, more
21 suitable herbicides than currently exist. As
22 professionals foresters, wouldn't that be your
23 preference.

24 DR. CAMPBELL: A. Certainly mine.

25 MR. GALLOWAY: A. Yes, and continued

1 research and development should occur in those areas.

2 Q. All Right. And the point being, by
3 use of the term suitable involved in that concept is
4 the suggestion of herbicides that can pass the
5 authorization and regulatory requirements for
6 authorization of use?

7 DR. CAMPBELL: A. Yes, definitely.

8 Q. All right. And so assuming that we
9 are talking the same language, that there is a need for
10 additional suitable herbicides - suitable in that
11 sense, all right - is that related in part, Dr.
12 Campbell, to the answer you gave me a few moments ago
13 that that is because the herbicides available today,
14 for example glyphosate, are effective in certain
15 circumstances and not in others?

16 A. Could you repeat the question?

17 Q. All right. Is the need for
18 additional suitable herbicides in part the result of
19 the fact that the herbicides available today, for
20 example glyphosate or 2,4-D, are effective in some
21 situations but perhaps not in others?

22 A. Yes, that's correct.

23 Q. All right. In other words, each
24 herbicide, including those available today, has
25 characteristics entirely its own as to when it will be

1 effective and when it will not?

2 A. Yes, that's true.

3 Q. All right. And the example that you
4 gave me with respect to glyphosate, is that it may be
5 successful in controlling grass whereas 2,4-D may not?

6 A. That's correct.

7 Q. In fact 2,4-D isn't, as a normal
8 course; isn't that so, isn't effective in controlling
9 grass?

10 A. Yes.

11 Q. All right. That being the case, the
12 fact that both of those chemicals are available and
13 authorized for use afford I suggest the professional
14 forester the ability to make a choice as to which can
15 apply in appropriate circumstances; clearly a choice
16 which would be not be available if there was only one
17 herbicide authorized for use?

18 A. That's right and that was the
19 situation prior to 1984.

20 Q. All right. And with that in mind
21 then, is it the position of the Ministry, insofar as
22 you are aware, that a commitment should be made to
23 continuing research and development for herbicides
24 suitable for use in forestry applications in the area
25 of the undertaking?

1 A. Yes.

2 Q. And is there a current financial
3 commitment in that regard by the Ministry?

4 A. Certainly there is expenditure and
5 effort being put into research. It is not - how should
6 I put it - there is not a specific centralized budget
7 for forestry herbicide research.

8 I should -- one thing I should point out
9 is that one of the major constraints on getting other
10 herbicides is something which we have relatively little
11 control over and, that is, that in order to get a
12 herbicide registered it has to -- data has to be
13 generated on things like toxicology and environmental
14 impact which the Ministry does not have the expertise
15 to deal with.

16 Q. All right. Well, just on that aspect
17 of it, on the issue of matters over which you have no
18 control, you would agree with me that the Ministry, for
19 that matter the forestry industry, are not in the
20 business of manufacturing herbicides?

21 A. That's correct.

22 Q. The Ministry does not have control, I
23 suggest, over any decision-making by manufacturers as
24 to whether production of the given herbicide should be
25 continued or discontinued?

1 A. That's right.

2 Q. And are there not circumstances
3 documented in the literature where manufacturers have,
4 for reasons of their own, elected not to continue
5 production of certain herbicides although from a
6 forestry use perspective or another user perspective,
7 it might have been desirable that that production
8 continue?

9 A. There is only one which I can think
10 of in the past which production was actually ceased and
11 that was one called Fenuron, F-e-n-u-r-o-n, by the
12 trade name of Dybar, D-y-b-a-r.

13 Q. If the manufacturers, for example, of
14 glyphosate or 2,4-D decided tomorrow that it was no
15 longer economic in their view to produce either of
16 those chemicals in the future, there would be nothing
17 the Ministry could do about it; isn't that so?

18 A. That's correct.

19 Q. And nothing the forest industry could
20 do about it; isn't that so?

21 A. That's correct.

22 Q. Save for bringing to bear whatever
23 pressure might be brought to bear. You are not in the
24 manufacturing business, you couldn't alter the
25 situation?

1 A. The decision would undoubtedly be an
2 economic one.

3 Q. And is the lack of control over that
4 aspect of the matter and the possible risk of cessation
5 of production for commercial reasons by manufacturers
6 not simply another reason that research and development
7 regarding other suitable herbicides should continue?

8 A. Very much so.

9 Q. And I suppose it then follows from
10 that quite naturally, Dr. Campbell, but please tell me
11 if you agree, that if one of those two herbicides were
12 not to be available in the future, the range of options
13 available to professional foresters in the area of the
14 undertaking would be considerably and significantly
15 narrowed?

16 A. Given that those two herbicides
17 represent 90 per cent -- I believe it's 90 per cent of
18 the total we were using, if you take one of those away
19 it certainly makes a big difference.

20 THE CHAIRMAN: Why do you suppose many of
21 the herbicides used in the States and registered there
22 are not also registered in Canada? Is it a market
23 decision, because it's too small a market up here to go
24 through the process?

25 DR. CAMPBELL: Largely a market decision.

1 Perhaps I could give one example, which is probably the
2 more typical type of situation of something not being
3 available here rather than something ceasing
4 manufacturing.

5 There is a herbicide which is referred to
6 as Krenite, K-r-e-n-i-t-e, which is registered for
7 forestry in the United States. It is registered in
8 Canada for right-of-way non-crop type situations.

9 There was interest in British Columbia to
10 use it in forestry. However, in order to obtain a
11 forestry registration in Canada there was -- Health and
12 Welfare Canada had required a considerable amount of
13 additional toxicology testing - I have forgotten what
14 the exact number is - but I think it was something in
15 the order of a million dollars' worth of toxicology
16 tests.

17 And the company simply looked at the
18 market and the profit they would make on it and said it
19 simply didn't warrant it.

20 MS. CRONK: Q. That is a problem we have
21 in the current environment; isn't it, Dr. Campbell?

22 MR. CAMPBELL: A. That's correct.

23 Q. Mr. Hynard, with respect to the use
24 of herbicides again, could I ask you to go, if you
25 would please, to Exhibit 513 which is one of the FMA

1 agreements that has been marked as an exhibit.

2 MS. CRONK: Does the Board have that
3 available to it, Mr. Chairman, Exhibit 513 that is the
4 Pineland FMA?

5 MR. CASSIDY: Mr. Mander may have that,
6 Mr. Chairman. He is aware that you need it and if he's
7 monitoring the hearing he should bring it down if you
8 don't have it already.

9 MS. CRONK: Mr. Chairman, if you don't
10 have it with you, it would be appropriate to take the
11 break.

12 THE CHAIRMAN: Okay. Why don't we take a
13 break and get that exhibit. It's number again was...?

14 MS. CRONK: 513.

15 MR. CASSIDY: 513.

16 THE CHAIRMAN: 513. Very well, 20
17 minutes.

18 MS. CRONK: Thank you.

19 ---Recess taken at 3:30 p.m.

20 ---On resuming at 3:55 p.m

21 THE CHAIRMAN: Thank you. Be seated,
22 please.

23 We have that exhibit now, Ms. Cronk.

24 MS. CRONK: Thank you, Mr. Chairman.

25 Q. Mr. Hynard, before the break I had

1 asked you to look at Exhibit 513. And I would ask you
2 now, if you would please, to go to page 7 of Schedule C
3 dealing with tending, section 6.7. Do you have that?

4 MR. HYNARD: A. Yes, I do.

5 Q. All right. You gave some evidence
6 with respect to this matter during your
7 evidence-in-chief during this panel and I would ask you
8 to take just a moment, if you would please, and read
9 the first paragraph to yourself, paragraph 6.7,
10 relating to tending.

11 A. Yes, I have read that.

12 Q. Am I correct, Mr. Hynard, that
13 pursuant to this provision with respect to tending, it
14 is the responsibility of the agreement holder; that is,
15 the company to plan and execute aerial herbicide spray
16 programs within the agreement area?

17 A. Yes, it is.

18 Q. That is a task, to use the language
19 we once used before, that's imposed on the company?

20 A. Yes.

21 Q. The regulation of pesticide
22 application in Ontario of course is carried out,
23 however, by the Ministry of the Environment; is that
24 correct?

25 A. That's right.

1 Q. All right. Are the companies
2 required to submit aerial herbicide application plans
3 to the Ministry of the Environment alone or to the MNR
4 as well?

5 A. To both.

6 Q. And does the MNR review those
7 proposals or a proposal for a spray program at any
8 particular point in time?

9 A. Yes, in the annual work schedule in
10 the year preceding. It would be November in the year
11 preceding treatment.

12 Q. Does the MNR have the right pursuant
13 to this form of an FMA agreement, for example, to
14 reject a proposed spray program?

15 A. Yes, it can.

16 Q. Can it impose conditions as a
17 condition of granting its approval to the proposed
18 spray program?

19 A. Yes, it can.

20 Q. And who -- if approved, who then is
21 responsible for obtaining the necessary permits and
22 approvals from the Ministry of the Environment, the
23 company?

24 A. The company.

25 Q. I'm sorry?

1 A. The company.

2 Q. The company. Would you agree with me
3 that, under the language of this particular agreement
4 in the first paragraph under paragraph 6.7, there is an
5 expressed prevention aspect to the tending
6 responsibility imposed upon the company?

7 A. Yes, there is.

8 Q. I would ask you then to look, if you
9 would please, at the next paragraph of paragraph 6.7.

10 A. Yes, I have gone through that.

11 Q. All right. Am I correct that that
12 paragraph sets out, Mr. Hynard, as you alluded to in
13 your evidence-in-chief, under this particular agreement
14 the circumstances in which the agreement holder; that
15 is, the company will be released from its obligation to
16 tend?

17 A. Yes.

18 Q. And am I -- do you share my reading
19 of the provision that that can occur in two
20 circumstances: First, where appropriate herbicides are
21 not licensed for forestry use. That's the first
22 situation; is that correct?

23 A. Yes.

24 Q. Or, secondly, where appropriate
25 herbicides cease to be licensed for forestry use?

1 A. Those are the words. It says:

2 "In the event that appropriate herbicides
3 are not or cease to be licensed for
4 forestry use in Ontario."

5 Yes.

6 Q. In either of those circumstances the
7 company's tending obligation is suspended?

8 A. That's right.

9 Q. And then could you read the next two
10 sentences as well to yourself to familiarize yourself
11 with them, please?

12 A. Yes.

13 Q. All right. Am I correct --

14 THE CHAIRMAN: Who determines -- Ms.
15 Cronk--

16 MS. CRONK: I'm sorry.

17 THE CHAIRMAN: --who determines
18 appropriateness?

19 MS. CRONK: I'm sorry, I don't
20 understand, sir.

21 THE CHAIRMAN: Who determines what
22 herbicides are appropriate or whether or not the
23 herbicides are appropriate?

24 MR. HYNARD: I would have to take a
25 moment to think about that. This is a condition of the

1 agreement. And I infer from your question there: What
2 if there were a dispute between the two parties about
3 how appropriate that herbicide is. Yes. May I take a
4 moment to think about that?

5 THE CHAIRMAN: Certainly.

6 MR. HYNARD: Thank you.

7 MS. CRONK: Q. We will come back to that
8 then, Mr. Hynard. But with respect to the next two
9 sentences, would you agree with me that those
10 provisions protect both the Minister's position and the
11 company's position in the event that appropriate
12 herbicides become unavailable?

13 MR. HYNARD: A. Yes, both.

14 Q. What do you understand the purpose of
15 this provision to be?

16 A. Oh. Well, I understand that to be --
17 to lay out the responsibilities of both parties
18 should -- in the event that appropriate herbicides were
19 not available for use for the purposes stated in those
20 groundrules.

21 In other words, so essential is herbicide
22 application to the success of the program that were
23 they to be unavailable for any of those reasons cited,
24 the obligations of both parties would be waived or
25 lifted or would not apply.

1 In other words, they are so vulnerable,
2 both parties, to being unable to fulfill their
3 obligations that they thought they should put this in
4 the agreement to lay out what would happen in that
5 event.

6 Q. Would you --

7 A. That's how I understand it.

8 Q. Would you agree with me, Mr. Hynard,
9 that the language contained in that paragraph, in light
10 of the purpose as you understand it, is a reflection of
11 just how important both the company and the Minister
12 regard the need to use herbicides such that, without
13 appropriate herbicides, neither is prepared to be held
14 to their obligations that they have contractually
15 committed to under the agreement?

16 A. Exactly.

17 MRS. KOVEN: I didn't see anything in the
18 written evidence that suggested there was a type of
19 vegetation that the current suite of chemicals used by
20 the Ministry as herbicides would be unable to handle?

21 DR. CAMPBELL: Could you repeat the
22 question, I'm sorry?

23 MRS. KOVEN: It seems to me we are
24 talking about the availability or the use of
25 herbicides. There is a question raised here that in

1 fact there is some type of vegetation or some
2 competition problem that the existing herbicides would
3 be unable to deal with.

4 DR. CAMPBELL: There are certainly
5 conditions where types of competition which could be
6 controlled better with other herbicides.

7 Again, perhaps just to take an example,
8 there is a herbicide which is under research and - it
9 is registered in the United States but under research
10 in Canada now - called garlon or triclopyr, and this
11 herbicide is very effective in controlling species such
12 as mountain maple, is one which tends to sprout very
13 strongly after it has been, say, manually cut or
14 treated with 2,4-D. It is -- even glyphosate is not
15 particularly effective on mountain maple.

16 So, again, if we had this additional
17 herbicide we would be able to treat that type of
18 vegetation more effectively than if we tried to --
19 while 2,4-D would be essentially ineffective;
20 glyphosate probably could be used but might require
21 multiple treatments. Is that what you were speaking
22 of?.

23 MRS. KOVEN: Yes, yes. Because one
24 supposes you could always find a better herbicide,
25 there would always be a better one down the road

1 somewhere, but you are saying that mountain maple is a
2 specific example where the present herbicides just
3 don't do a very good job.

4 DR. CAMPBELL: It's not so much a better
5 herbicide, because each one has its niches. I guess
6 what we are saying is that every herbicide you get will
7 fit a certain niche and there may be still some niches
8 that are vacant, you might say.

9 MRS. KOVEN: Are there other examples
10 that come to mind as quickly as mountain maple?

11 DR. CAMPBELL: Well, a number of other
12 species which, you know, sprout very strongly. It
13 would be good for controlling aspen as well.

14 If you had a situation where you wanted
15 to control, let's for example say aspen and mountain
16 maple and may be other brush species, but didn't want
17 to control the herbaceous vegetation which glyphosate
18 would do, you could use the garlon.

19 THE CHAIRMAN: Could the company, using
20 that example, raise the argument that there is nothing
21 on the market that is presently available that would
22 really control mountain ash and, therefore, we should
23 be relieved of our obligation to tend?

24 DR. CAMPBELL: Well, it was mountain
25 maple or any of the maple species. It is not a clear

1 cut situation as in the case of prior to having
2 glyphosate where we could say we only had 2,4-D and it
3 would simply not control grass and raspberry at all.

4 The glyphosate would control the species,
5 it is just not as effective. It just comes down to the
6 part of the finesse, I think.

7 MR. GALLOWAY: In that situation what
8 would probably happen where there is no alternative,
9 then in the silvicultural groundrules, prescriptions,
10 different prescriptions of the whole panel would have
11 to be developed to take that into account.

12 It wouldn't be a simple thing: Well,
13 there is nothing, so we can't do it. You can change
14 some of the other total packages that Mr. Hynard has
15 alluded to.

16 THE CHAIRMAN: But the company wouldn't
17 necessarily want to get tied into a situation where,
18 because there wasn't something totally appropriate,
19 they would have to retreat several times at their
20 expense; would they or would they?

21 MR. GALLOWAY: No, naturally anyone
22 investing their money would, you know, resist that. So
23 then you would change and go for a different and
24 perhaps a whole different species on that site.

25 For instance, if it was the aspen/conifer

1 type difference, then on that site you would accept
2 aspen regeneration because you did not have any
3 feasible alternative and that was another option.

4 MS. CRONK: I'm sorry, sir, were you...

5 THE CHAIRMAN: Yes.

6 MS. CRONK: Q. Mr. Galloway, isn't that
7 precisely the point, that in the event that herbicides
8 effective for the purposes needed are not available, it
9 would require a fundamental revisiting of the tending
10 program proposed for a particular area?

11 MR. GALLOWAY: A. If that was the fact,
12 yes.

13 Q. Yes.

14 A. That's correct.

15 Q. And, therefore, a provision of this
16 kind, Mr. Hynard, protects against that potentiality,
17 remote or otherwise?

18 It protects both parties, the Minister
19 and the company, in the event that circumstances change
20 such that effective and appropriate herbicides are not
21 available to deal with the situation originally
22 contemplated; is that fair?

23 MR. HYNARD: A. Well, that is fair.

24 They would have to rethink the entire package all
25 right, including the kind of crops they are going to

1 grow or be able to grow.

2 This sets out what their obligations will
3 be. For example, if the company were no longer able to
4 control competition and release conifer, let's say that
5 the herbicides were no longer licensed for use in
6 Ontario, what would happen to all their outstanding
7 obligations as laid out in the agreement, bringing all
8 these areas that have been regenerated to free to grow,
9 or bringing them at least to the stage where they pass
10 the stocking standards, and the company would argue:
11 Well, it is no longer possible for us to do that, and
12 they would have this very heavy hammer hanging over
13 their heads.

14 And this just lays out that that
15 obligation will not exist should that ever occur.

16 Q. Isn't the point, Mr. Hynard, simply
17 this: That both parties to these agreements agree upon
18 their respective tasks or obligations under a given
19 state of affairs and should those affairs change in the
20 future, should the tools available to the forester
21 fundamentally alter, they are freed from having to
22 honour a bargain that they entered into under very
23 different circumstances?

24 A. Exactly. That's the purpose.

25 Mr. Chairman, I have had time to think

1 about your question: Who determines whether the
2 herbicides are appropriate, and I would say that the
3 two parties, the Minister and the agreement holder
4 would determine that.

5 For example, they would have a look at
6 the area at hand and the kind of crop trees and
7 competition that is there and decide between the two
8 whether the herbicides that are available to them; that
9 is, registered for use in Ontario will be effective in
10 that situation.

11 And if the two parties agree that the
12 herbicides are not appropriate, then this clause would
13 take effect. If the two parties were to dispute that,
14 then they would resolve that in the same way that they
15 would resolve a dispute over any other groundrule.

16 Q. Does appropriate in that context, to
17 your mind, Mr. Hynard, have an efficacy component as
18 well?

19 A. Yes, a number of components of which
20 efficacy certainly would be one.

21 Q. And, Dr. Campbell, I believe, to come
22 back to your use again of the word finesse in this
23 context. Do I understand that really to mean that if
24 one is able, in your terminology, to use herbicides
25 with greater finesse you are using them more

1 effectively?

2 DR. CAMPBELL: A. Yes, you are going to
3 be able -- by using the most appropriate herbicide you
4 are going to be able to use the minimum amount of it
5 and you are going to be able to target in on exactly
6 what species you want to control.

7 Q. And achieve the greatest result?

8 A. That's right. Cost benefit.

9 Q. Is that a fair description of what
10 you mean by use of the term finesse?

11 A. Yes.

12 Q. Thank you.

13 MS. CRONK: Mr. Chairman, I would like to
14 turn now to the subject of insecticides and my next
15 questions will be directed, Mr. Churcher, to you.

16 Could I file first, Mr. Chairman, a
17 response to Interrogatory No. 5, that's OFIA
18 Interrogatory No. 5 with respect to Panel 13.

19 THE CHAIRMAN: Exhibit 666. (sic)

20 MS. CRONK: (handed)

21 THE CHAIRMAN: Thank you.

22 ---EXHIBIT NO. 656: Response to OFIA Interrogatory.
23 No. 5 (Panel 13).

24 MS. CRONK: I'm sorry, Mr. Chairman, what
25 did you say the exhibit number was?

1 THE CHAIRMAN: Exhibit 666 -- Exhibit
2 656.

3 MR. CASSIDY: Are you trying to get us to
4 that thousand mark a little early, Mr. Chairman?

5 THE CHAIRMAN: We can't even keep track
6 of the ones we have, what are we going to do with a
7 thousand.

8 MS. CRONK: Q. Mr. Churcher, there are a
9 number of aspects of your evidence with respect to the
10 use of insecticides in the area of the undertaking that
11 I wish to explore with you. But, at the outset, may we
12 in general terms speak about what I would term certain
13 general principles.

14 MR. CHURCHER: A. Very well.

15 Q. Could I suggest to you, Mr. Churcher,
16 that protection of the timber resource in Ontario from
17 insect damage is an essential component of any effort
18 to achieve a predictable future wood supply?

19 A. Yes, that would be a fair statement.

20 Q. All right. And given that it is an
21 essential component of that objective, the effects of
22 defoliation must be viewed and assessed in terms of
23 their potential seriousness for future wood supply
24 issues; would you agree?

25 A. That is certainly a consideration,

1 yes.

2 Q. All right. Now, as I understand it,
3 the effect of or the potential effects of defoliation
4 caused by insect or pest damage are several, and I
5 would ask whether you agree or disagree.

6 Am I right, first, that in some instances
7 defoliation, if sufficiently severe, can lead to
8 complete tree mortality?

9 A. In some cases, yes. Usually when it
10 is repeated year after year.

11 Q. Secondly, defoliation, again
12 depending upon the extent of it, can negatively affect
13 the annual growth pattern of the trees affected by the
14 defoliation?

15 A. That's true.

16 Q. And affected negatively in the sense
17 that annual growth is retarded, if you will?

18 A. Yes.

19 Q. All right. Can it also increase the
20 potential for fire?

21 A. That has been suggested and that's
22 usually related back to the first instance when you
23 have tree mortality, that there are -- that wild fires,
24 when they do begin or when they are started, take off
25 or spread much faster in areas where there has been

1 killed timber or timber killed by insects.

2 Q. All right. And are there any other
3 immediate adverse effects of defoliation which occur to
4 you other than the ones that I have listed?

5 A. There are cases, for instance, in
6 jack pine budworm where the entire tree may not die;
7 however, portions of the tree may die, such as top kill
8 where just the upper portion of the tree may die, the
9 tree itself however is still alive.

10 This usually or may result with the top
11 or upper portion of the tree eventually breaking off
12 and the tree -- one of the lateral or one of the side
13 branches assuming the leader position and you end up
14 with a tree with a crook in it.

15 Q. So it can result in damaged tree
16 effects as well as tree mortality?

17 A. That's correct.

18 Q. All right. All of those factors, I
19 suggest, have a direct impact on the availability -- on
20 the sufficiency of the inventory of mature trees in the
21 area of the undertaking; would you agree?

22 A. Yes.

23 Q. All right. Is it fair to suggest,
24 Mr. Churcher, as a general proposition that if
25 inadequately or ineffectively controlled, insect losses

1 can seriously disrupt the provision of current and
2 future wood supplies?

3 A. In some cases, that's true, yes.

4 Q. In some cases. As a general matter,
5 if insect/pest damage is not adequately and
6 sufficiently controlled, will it not have a significant
7 inevitable effect on future and current future wood
8 supply?

9 A. Yes.

10 Q. All right. And that -- in the area
11 of the undertaking it is in fact a very serious issue;
12 is it not, given the extent of insect/pest damage
13 sustained in the past?

14 A. Yes, it is a situation that warrants
15 close examination on an annual basis.

16 Q. All right. The point being that the
17 forests in the area of the undertaking are not forests
18 which have exhibited in the past a consistent immunity
19 to significant insect/pest damage, it is quite the
20 reverse; isn't it?

21 A. That's correct.

22 Q. All right. And historically in the
23 area of the undertaking there has been considerable
24 loss of timber resource to insect/pest of one kind or
25 another; isn't that so?

1 A. Yes.

2 Q. All right. I would like to look at
3 that issue in relation to the size of the problem, Mr.
4 Churcher, if we could. And could we start by looking
5 at the response to Interrogatory No. 14, Forests for
6 Tomorrow, Panel 12.

7 MS. CRONK: I would like to mark that,
8 Mr. Chairman, as the next exhibit.

9 THE CHAIRMAN: That will be Exhibit 657.

10 MS. CRONK: (handed)

11 THE CHAIRMAN: Thank you.

12 ---EXHIBIT NO. 657: Response to Forests for Tomorrow
13 Interrogatory No. 14 (Panel 12).

14 MS. CRONK: Q. Do you have a copy of
15 that, Mr. Churcher?

16 MR. CHURCHER: I don't believe I do, no.

17 Q. (handed) Mr. Churcher, the
18 information provided in this exhibit, as I understand
19 it, sets out on the basis of a breakdown with respect
20 to both species and year, the extent of lands harvested
21 during the period 1981-1987; that is, harvesting on
22 Crown lands. Is that correct?

23 MR. CHURCHER: A. Yes, this is the first
24 time I have examined this response closely. That
25 appears to be correct.

1 Q. All right. Well, could I ask you,
2 sir, to look at the total harvesting line at the bottom
3 of the document.

4 A. Yes.

5 Q. Am I correct that for the last
6 several years the total volume of lands harvested on
7 Crown lands has approximated 20-million cubic metres?

8 A. Yes, that's correct.

9 Q. And that has been, I suggest, for the
10 last several years -- certainly since 1985 that has
11 been the case in each year, and it was virtually that
12 in 1984?

13 A. Yes.

14 Q. Are you familiar, Mr. Churcher, with
15 the Selected Forestry Statistics published from time to
16 time by the Canadian Forestry Service? Do you know of
17 the publication?

18 You are familiar with their publication
19 service in that regard?

20 A. Yes.

21 MS. CRONK: Mr. Chairman, I am producing
22 an extract from the Canadian Forestry Service, Selected
23 Forestry Statistics, Ontario, 1987. I would ask to be
24 the next exhibit.

25 THE CHAIRMAN: Exhibit 658.

1 MS. CRONK: (handed)

2 ---EXHIBIT NO. 658: Extract from the Canadian Forestry
3 Service, Selected Forestry
Statistics, Ontario, 1987.

4 MS. CRONK: Q. Mr. Churcher, the purpose
5 of showing you this document is to relate the extent of
6 the area harvested on Crown lands in the last several
7 years to the extent of the insect/pest problem
8 documented and reported over the last several years by
9 the Canadian Forestry Service.

10 Could I ask you to look at page 2 of this
11 exhibit and can you confirm for me that on an average
12 annual basis, during the years 1977-1981, there were
13 insect losses suffered in Ontario forests on a scale of
14 15.4-million cubic metres per year?

15 MR. CHURCHER: A. Yes, that's correct.

16 Q. And am I correct then in suggesting,
17 in relating those two pieces of information, that the
18 extent of pest losses on forests in Ontario on an
19 annual basis approximates some 75 per cent of the
20 extent of the area annually harvested?

21 THE CHAIRMAN: Ms. Cronk, isn't that
22 somewhat possibly comparing apples and oranges though
23 because the wood volume lost to insects may not be
24 harvested -- may not be merchantable wood in the first
25 place.

1 MS. CRONK: I will ask the witness to
2 confirm that. That would be my understanding, sir, and
3 I'll pursue that.

4 THE CHAIRMAN: You have got two figures
5 and you may -- you know, one is slightly less than the
6 other by 5- illion cubic metres, but it may not be
7 necessarily of the type of wood that would be
8 harvested.

9 MR. CHURCHER: That is a correct
10 assumption. Not necessarily. A portion of this
11 15.5-million cubic metres losts to insects--

12 THE CHAIRMAN: Obviously would be.

13 MR. CHURCHER: --would be -- another
14 portion would not be.

15 MS. CRONK: I take your point, Mr.
16 Chairman.

17 Q. And the point to you, Mr. Churcher,
18 is simply this: That if we are looking for a way to
19 assess the enormity or lack thereof of the insect/pest
20 problem in the forests in Ontario, these statistics of
21 the Canadian Forestry Service afford us some indication
22 of the extent of the problem over the last several
23 years on an annual basis. Is that so?

24 MR. CHURCHER: A. That is correct.

25 Q. All right. And as the Chairman

1 points out, there is not a direct correlation between
2 the 15.4-million cubic metres and the amount of that
3 lost area that would otherwise have been used for
4 harvest?

5 A. That is also correct.

6 Q. But having said that, is it fair -
7 and please tell me if it is not, in your view - is it
8 fair to relate that to get a relative proportion
9 understanding as to how that relates to the extent of
10 the area harvested in the area of the undertaking?

11 A. No, it's a correct relationship to
12 draw. In fact, it is very similar to the one that I
13 drew in my direct evidence.

14 Q. And am I correct that the 15.4-cubic
15 metre figure relates strictly to pest or insect losses,
16 not disease losses; that's a different figure?

17 A. That is correct. The 15.49 or
18 15.5-million cubic metres is total insect -- total
19 losses due to insects alone.

20 Q. All right. Now, perhaps you can help
21 me, because I don't know the direct answer to the point
22 the Chairman has raised, and that is: Is there a basis
23 upon which, in using the Canadian Forestry Service
24 statistics, you can determine the proportion of that
25 15.4-million cubic metres that was categorized as

1 current or potentially future harvestable lands?

2 Can you do that? I don't know the
3 answer.

4 A. To my knowledge and my understanding
5 of how the Canadian Forestry Service derived these
6 numbers, no, that there is no way that we can extract
7 from that what portion would have been unharvestable
8 lands.

9 Q. What would your expectation be, if
10 you have one, knowing what you know about the extent of
11 insect/pest problems in the area of the undertaking?

12 MR. GALLOWAY: A. I might be able to
13 assist Mr. Churcher in that the numbers used, as
14 indicated at the bottom of page 29, are gross total
15 volume and, as the Chairman indicated, the other
16 numbers are merchantable.

17 And a ballpark percentage for -- and
18 realizing that you are talking about many species,
19 would be a 30 per cent reduction, and that would allow
20 for some tops and stumps taken out of that.

21 So that's a ballpark conversion that I
22 would use, for instance, in a district to go from gross
23 total volume to the merchantable volume.

24 Q. All right. So that if we reduced
25 then the \$15.4-million figure - million dollars, I'm

1 sorry - the 15.4-million cubic metre number by some 30
2 per cent, would that in your judgment approximate the
3 amount of volume lost to insect/pests that would
4 otherwise be harvestable, current or future land?

5 A. Mr. Churcher would have to speak to
6 the insects. But, yes, that would take the total down
7 from gross total volume to relate to a merchantable
8 volume figure for comparison purposes.

9 MRS. KOVEN: But that would assume that
10 the 15.5-cubic metres were entirely harvestable to
11 start with.

12 MR. GALLOWAY: Yes. The definition of
13 that gross total volume is all volume on the site, but
14 a 30 per cent reduction of that is a ballpark figure.

15 MS. CRONK: Q. Would you agree with me,
16 Mr. Churcher, that even on that basis there is a very
17 significant proportion of loss documented on an annual
18 basis to insect/pests?

19 MR. CHURCHER: A. Yes.

20 Q. And on that basis, given the extent
21 of the problem, if I can put it that way, would you
22 agree with me that in order to effectively control
23 insect damage in the area of the undertaking, it is
24 fundamental that adequate technology be made available
25 on a continuing basis to the timber manager to permit

1 such control to take place?

2 A. Yes, I would agree with that.

3 Q. I don't want to make it more
4 complicated than it is. You need up-to-date,
5 state-of-the-art technology to meet the threat of
6 insect/pest today and in the future?

7 A. That's correct.

8 Q. And would you...

9 ---Discussion off the record

10 THE CHAIRMAN: We were just having a
11 little discussion for half a second up here about the
12 fact that these figures would not necessarily be
13 cumulative, but they could be in the sense that in the
14 first year you could lose, say, 10-million cubic metres
15 of otherwise merchantable wood due to defoliation, due
16 to insect/pest; in the second year you might lose
17 another 7 or 8-million or something like that.

18 Because presumably some of the trees
19 wouldn't be totally killed they would come back the
20 following year; would that not be the case?

21 MR. CHURCHER: Yes, that would be true.

22 THE CHAIRMAN: So in a short order, you
23 could be beyond what you are harvesting?

24 MR. CHURCHER: On any given year, that
25 would be possible. The numbers that are presented here

1 on this table are the average over that five-year study
2 that was studied 1977-1981.

3 They took the total amount -- total
4 cumulative damage or loss with respect to volume,
5 divided it by five, and came up with an average per
6 year. And that is what was reported the 15.5-million
7 cubic metres.

8 THE CHAIRMAN: But the other exhibit we
9 looked at, I guess it was 657, did it an on annual
10 basis; didn't it?

11 MR. CHURCHER: Yes, that is true, they
12 reported how much was harvested, the volume harvested
13 in cubic metres on an annual basis.

14 MS. CRONK: Just to make sure that I
15 understand, Mr. Chairman.

16 THE CHAIRMAN: I'm not sure we understand
17 what we are asking either, but...

18 MS. CRONK: Q. Could I -- this is
19 perhaps fundamental to my lack of understanding or
20 understanding.

21 Exhibit 658, the extract from the CFS
22 statistics, all right, could you like at the caption
23 description at the beginning of the table, table 3.6.

24 MR. CHURCHER: A. Right.

25 Q. Right And it's on that basis -- it

1 says average annual pest-caused losses in Ontario
2 forests 1977-1981. Okay.

3 A. That's correct.

4 Q. And it's on that basis that you
5 suggested to the Chairman that the figures for each of
6 those years were aggregated and an average taken over
7 the course of five years?

8 A. That's correct.

9 Q. All right. Whereas -- so that the
10 the number, the 15.4, is not an accurate representation
11 of any particular year; whereas with respect to the
12 harvesting figures, we have actual figures per year in
13 accordance with the response that has been provided to
14 us in the interrogatory?

15 A. That's correct.

16 Q. And, again, whether the number should
17 be reduced in the fashion suggested by Mr. Galloway to
18 arrive at a working merchantable timber volume number
19 or otherwise, either way it's a very significant degree
20 of insect loss then; would you agree?

21 A. Yes, I would agree.

22 Q. All right.

23 MR. MARTEL: Could you answer something.
24 We are watching the decline of the spruce budworm very
25 significantly over the last several years. Have you

1 got the figures for last year, are they out yet as to
2 what in fact it would have been around that might have
3 been destroyed last year, because this goes back to
4 1981.

5 MS. CRONK: For spruce budworm, Mr.
6 Martel?

7 MR. MARTEL: Yes.

8 MS. CRONK: Because there is that data
9 that has been provided in some of the interrogatory
10 responses that we will be looking at when we come to
11 look at the efficacy data and, as well, in the answer
12 to Question No. 5 which has just been filed that I will
13 be coming back to.

14 There is also current statistics with
15 respect, I believe specifically, to both spruce budworm
16 and jack pine budworm.

17 Q. Am I correct in that?

18 MR. CHURCHER: A. Yes, that's correct.
19 If I can add one point to that. A study of this type
20 was done and it covered the years 1977-1981. There has
21 not been a comparable study completed to date.

22 However, the Ministry of Natural
23 Resources and the Canadian Forestry Service are
24 currently working on a very similar study to this to
25 give the similar figures from the years 1982-1987, I

1 believe, which would include the more recent
2 developments of the spruce budworm rise and fall which
3 you indicated, as well as the recent epidemic of jack
4 pine budworm.

5 Q. Are these statistics, Mr. Churcher,
6 taken from the latest available from the Canadian
7 Forestry Service?

8 A. Yes, they are.

9 Q. And if I could return to the
10 suggestion I was making to you about the significant
11 problem that has to be addressed on a continuing basis,
12 would you agree with me that in addition to the need
13 for up-to-date effective technology to be available to
14 the forest manager on a continuing basis, there is a
15 need as well, from a pest management perspective, as
16 many effective technological pest management options as
17 possible be available?

18 A. Yes.

19 Q. And is that so because the nature of
20 the insect threat which must be dealt with from time to
21 time changes over time having regard to the epidemic of
22 patterns of various insect species?

23 A. Yes, the fact that there are a number
24 of different insect species and that they are in
25 different situations, in different circumstances, in

1 different points in time and space require a number a
2 number of different options available to the forest
3 manager so he can respond to each of those, each insect
4 in each circumstance at each point in time.

5 Q. And is it not so, Mr. Churcher - and
6 I think you alluded to this, if indeed you weren't more
7 specific in your evidence-in-chief - that many
8 insecticides are insect specific, they are effective
9 only with respect to particular types of insects and
10 not categories of insect species?

11 A. Yes, this is especially true of
12 biological insecticides, that they tend to be insect or
13 species specific.

14 MS. CRONK: Mr. Chairman, I will be some
15 time with Mr. Churcher on the issue of insecticides. I
16 can continue this evening, if you wish for a bit
17 longer, or we can recommence in the morning.

18 THE CHAIRMAN: How long are you going to
19 be in the morning?

20 MS. CRONK: That depends, sir, on whether
21 we break now. I will be at least 45 minutes and I
22 would think if we broke now, I would be at least an
23 hour.

24 THE CHAIRMAN: All right. Why don't we
25 go to five tonight. And you would be able to finish,

1 if you can go to five tonight, without getting into the
2 three quarters of the hour you want to do tomorrow?

3 MS. CRONK: No, but that is fine I can.

4 THE CHAIRMAN: Okay.

5 MS. CRONK: Q. Mr. Churcher then, to
6 relate those general principles specifically to the
7 policies that currently apply with respect to the use
8 of insecticides in the area of the undertaking, could I
9 ask you to look first, if you would please, at the two
10 press announcements, the documents that have been filed
11 as exhibits, Exhibits 635 and 636.

12 MR. CHURCHER: A. Yes.

13 Q. Mr. Churcher, as I understand your
14 evidence with respect to Exhibit 635 and 636, you have
15 said - please correct me if I'm wrong - that there is
16 no policy existent today in Ontario prohibiting the use
17 of chemical insecticides; is that correct?

18 Is that what you said in your evidence?

19 A. That is correct, yes.

20 Q. And did I also hear you correctly to
21 say that it was really a matter of practice not policy
22 that biological insecticides had been used without use
23 of chemical insecticides since 1985?

24 A. Yes. Those may not have been my
25 exact words, but that was a good paraphrase of what I

1 said.

2 THE CHAIRMAN: What is the difference,
3 Ms. Cronk--

4 MS. CRONK: I don't know, sir.

5 THE CHAIRMAN: --in practicality if the
6 government states publicly that they don't intend to
7 use chemical pesticides period?

8 MS. CRONK: The Chairman has put in one
9 question what might have taken me two pages to get to.

10 q. And the answer to that question, Mr.
11 Churcher, please?

12 MR. CHURCHER: A. In my mind the
13 difference between those two is that the decision that
14 was made in 1985 and 1986 in these two exhibits and
15 subsequent decisions as to whether we use chemical or
16 not chemical are made on an annual basis.

17 The decision that was announced in the
18 News Release dated May 7th, 1985 applied only to the
19 year 1985; it wasn't an edict or saying that we will
20 never use chemicals -- chemical insecticides applied
21 from the area in the future in Ontario, it was just
22 specific to that one year.

23 Similarly for 1986, in the News Release
24 dated February the 12th, I believe, the decision and
25 the announcement applied only to the year 1986.

1 When I think of policy I think of a piece
2 of paper that has been given a policy number such as
3 policy FRO-41001 that talks about policy as far as the
4 use of insecticides for forest management in Ontario.

5 THE CHAIRMAN: But that could be changed
6 by any government in power at any time they wanted,
7 could they not?

8 MR. CHURCHER: This is true, yes.

9 THE CHAIRMAN: The Cabinet could just
10 decide: We don't like that policy any more, here's the
11 new the policy.

12 MR. CHURCHER: That's right. But there
13 has been nothing expressed to the field or to myself,
14 to my knowledge, that tells us that in the annual
15 planning process for protection programs that we cannot
16 consider the use of chemicals, and if we feel it is
17 appropriate or warranted, that we cannot recommend that
18 chemicals be used.

19 MR. MARTEL: What if the Legislature as
20 it did on that occasion said no, I mean, whether the
21 Minister agreed or was forced into it, when the
22 Legislature said no, was that not the policy? I mean,
23 the Legislature is the highest authority in the land, I
24 think.

25 Does that become policy or not?

1 THE CHAIRMAN: I wonder if we should
2 debate that here.

3 MR. CHURCHER: Within the provincial
4 boundaries, I guess that is true.

5 MS. CRONK: May I try to assist, Mr.
6 Chairman.

7 Q. Because you will understand, Mr.
8 Churcher, that some of these questions in a less clear
9 fashion perhaps were about to come to me too.

10 I suggest to you, sir, that what you
11 meant and what fairly the only thing you can take from
12 your distinction between policy and practice is that
13 there is no written policy emanating within your
14 Ministry bearing the policy number that says that thou
15 shalt not use chemicals until further notice, or words
16 to that effect.

17 MR. CHURCHER: A. That was my intent,
18 yes.

19 Q. All right. Having said that and
20 recognizing that there is no document bearing an
21 official policy number containing a message in words of
22 that kind or effectively words of that kind, is it not
23 the case that since 1985, on a practical basis in this
24 province, the use of chemical insecticides has been a
25 non-starter?

1 A. No, I would have to disagree with
2 that statement, in that in the years -- in the
3 preparation of the proposal for the 1985 and the 1986
4 insecticide program, chemicals were proposed at the
5 regional level across the province.

6 The decision came down in '85 and '86
7 that we would not use chemicals, we would only be using
8 BT.

9 As I understand your question, or as I
10 would interpret, the term non-starter would then
11 indicate that they were not discussed or were never
12 considered in subsequent programs.

13 Q. I didn't say that. I didn't say
14 that, Mr. Churcher.

15 A. Okay. I must have misunderstood.

16 Q. I'm suggesting to you that in the
17 real world as a result of the announcement that
18 occurred in 1985, and it was reiterated in 1986,
19 although chemical insecticides may be an option
20 considered and even preferred by professional
21 foresters, they are not, in the current climate,
22 subject to approval at the present time; it's not a
23 real option in the real terms, given the announcements
24 that occurred in 1985 and 1986.

25 Now, in fairness, isn't that the case?

1 A. Perhaps I'm still misunderstanding or
2 I have a mental block here, but -- and also insofar as
3 I can't speak for the Minister as to whether or not he
4 would accept the recommendation in 1989 or 1990 to use
5 chemical insecticides, but I can only speak from my
6 experience and from my understanding and that, that
7 chemical insecticides are considered and could very
8 well be recommended.

9 Whether the recommendation to use them is
10 accepted by the Minister or the Deputy or the Cabinet
11 or the Legislature, is well beyond...

12 THE CHAIRMAN: Mr. Churcher, what would
13 you say if somebody asked you the question: For the
14 years 1985, '86, '87 and '88 what was the policy of the
15 government with respect to the use of chemicals
16 insecticides in Ontario, what would your answer to that
17 be?

18 MR. CHURCHER: I would say that there was
19 a preference for the use of biological insecticides
20 and, in actual fact, that we did not use chemicals, the
21 entire program was done with biological insecticides.

22 MS. CRONK: Q. Mr. Churcher, I'm afraid
23 you and I are going to have to spend some time on this.

24 MR. CHURCHER: A. Okay.

25 Q. Could I ask you to look at the

1 language of Exhibit 635, the first policy --

2 MS. CRONK: Mr. Chairman, perhaps I
3 should mention...

4 THE CHAIRMAN: No, go right ahead.

5 MR. CHURCHER: The first News Release?

6 MS. CRONK: Q. Yes.

7 MR. CHURCHER: A. Okay.

8 Q. Am I correct first, Mr. Churcher,
9 that when that was issued or released, it was binding
10 on MNR staff throughout the province?

11 A. Yes, that's correct.

12 Q. All right. And clearly on any other
13 individuals involved in forestry enterprises in the
14 province, including the industry?

15 A. Yes.

16 Q. It was reiterated in 1986?

17 A. Yes, it was.

18 Q. The same conditions applied in '86,
19 it was binding on the MNR, it was binding on all those
20 others who were involved in forestry enterprises in the
21 province?

22 A. Yes.

23 Q. All right. Did anything happen in
24 1987 in writing from the then Minister of the day that
25 suggests to you that the perspective of the government

1 had changed?

2 A. No.

3 Q. Did anything happen in 1988 that
4 suggests to you that the perspective of the government
5 had changed?

6 A. No.

7 Q. And has anything happened in 1989
8 that suggests to you that the perspective of the
9 government had changed?

10 A. No.

11 Q. Now, you have said on a number of
12 occasions - and I want to be fair to you - that insofar
13 as you are concerned as a forester practicing in the
14 field, professional foresters are entitled to consider
15 the advisability on an annual basis of using the
16 chemical insecticide options; is that correct?

17 A. That's correct.

18 Q. You will get no quarrel from me on
19 that. But you will agree with me that what
20 professionals consider options from time to time may
21 bear very little relation to what in the end is subject
22 to approval that in fact may have happened?

23 A. Yes, I agree would with that.

24 Q. And isn't that the case with respect
25 to the use of chemical insecticides in this province

1 since 1985?

2 A. Yes.

3 Q. And when we look specifically at the
4 language of the 1985 announcement from the Minister, we
5 see on page 2 language that has been referred to you
6 before in paragraph 4 saying that:

7 "Having seen all the facts, I think it is
8 vital that we use aerial spraying as one
9 means to deal with this problem."

10 The Minister adds:

11 "I have decided to proceed with
12 insecticides which is the most acceptable
13 from the environmental standpoint."

14 I stop there for a moment.

15 Are you aware. Mr. Churcher, of any
16 staff report from the Ministry of Natural Resources
17 that went to the Minister in 1985 that suggested that
18 the use of chemical insecticides was inappropriate or
19 unwise from a safety point of view?

20 A. No, I'm not aware of any report.

21 Q. Are you aware of any report of that
22 kind that went to the Minister in 1985 that suggested
23 from an environmental acceptability perspective, or
24 environmental risk perspective that the use of chemical
25 insecticides was not to be permitted or should not be

1 permitted?

2 A. No, I'm not aware of any report of
3 that type.

4 Q. Are you aware of the existence of any
5 such reports in 1986?

6 A. No.

7 Q. Would you agree with me then, Mr.
8 Churcher that -- well, perhaps you could tell me: Had
9 such reports existed in 1985 in the course of your
10 normal duties, is that the kind of thing of which you
11 would be aware?

12 A. Yes, normally.

13 Q. And the same thing in 1986?

14 A. Yes.

15 Q. Were your duties such that you would
16 have been made aware of the existence of such a report?

17 A. Yes.

18 Q. Would you agree with me then that in
19 1985 when this decision was made there was no report,
20 of which you are aware, from the Minister which
21 provided or suggested a scientific basis upon which to
22 prescribe or limit the use of chemical insecticides on
23 safety or environmental risk grounds?

24 A. That is correct.

25 Q. And that was also the situation in

1 1986?

2 A. Yes.

3 MR. MARTEL: Could I ask a question,
4 though?

5 MS. CRONK: Yes, Mr. Martel.

6 MR. MARTEL: Is it necessary that you
7 would have seen all of the reports that were prepared
8 by the Ministry, or is it possible that the Minister
9 asked for and received from a certain number of people
10 a study which they didn't want to make available?

11 MR. CHURCHER: It is certainly possible,
12 you are correct. I answered from the point of view
13 that --

14 MR. MARTIN: You didn't see any?

15 MR. CHURCHER: I didn't see it. Briefing
16 notes that dealt with insecticides -- the use of
17 insecticides or insects tend to emanate from the Pest
18 Control section at that time, of which I am a member.

19 Since I'm the forest entomologist for the
20 Ministry, most of them would have been, if not drafted
21 by me, at least reviewed by me and, from that point of
22 view, most of the reports along the lines that Ms.
23 Cronk described I would assume would have -- I would
24 have seen at some point.

25 MS. CRONK: Q. And with that then in

1 mind, on page 2 of the 1985 announcement, Mr. Churcher,
2 is there any scientific basis of which you are aware on
3 which it should be concluded that use of the term
4 acceptable from an environmental standpoint should be
5 equated with environmentally safe?

6 MR. CHURCHER: A. On a scientific basis,
7 no.

8 Q. And with respect then to what happens
9 in the field or what has been happening in the field
10 since 1985 as a consequence of these Ministerial
11 statements, would you agree with me - or perhaps I'll
12 put the question to you this way:

13 You told the Board that in 1986 the
14 working group committee came forward with a
15 recommendation for an insecticide management, or
16 insect/pest management program which included the use
17 of both chemical insects and biological insecticides;
18 is that correct?

19 A. That's correct.

20 Q. And that was declined, approval was
21 not given?

22 A. That is correct.

23 Q. All right. Did you have any reason
24 to believe as a result of communications which you
25 received in the field or in your position with the

1 Ministry, to believe that the circumstances had changed
2 in any of 1987, 1988 or 1989 to date, circumstances as
3 to likelihood of approval of that kind of a proposal?

4 A. No.

5 MS. CRONK: May I have a moment, Mr.
6 Chairman?

7 Q. Mr. Churcher, just one final question
8 for the moment on this issue. Would you agree with me
9 in your capacity as a member of and representative of
10 your Ministry that when the Ministry speaks -- the
11 Minister speaks on a matter that affects your
12 operations that is, for all practical purposes, a
13 policy with which you must comply?

14 MR. CHURCHER: A. Yes, I would agree
15 with that statement.

16 Q. All right. And until there is some
17 indication given to you that the Minister's direction
18 in that regard is different from what was originally
19 communicated to you, are we to conclude that you
20 continued to abide by the first direction?

21 A. Yes.

22 Q. Let me repeat that so you understand.
23 What I'm saying is: If you received a direction of
24 that kind from your Minister, absent any indication
25 that the direction has changed, would it be fair of us

1 to conclude that you would abide by the first
2 direction?

3 A. Yes, I would agree with that. The
4 reason I hesitated was because my understanding of the
5 decision in 1986 was that it applied only to the field
6 season of 1986.

7 Q. Does it say that?

8 A. In the News Release? I would have to
9 check.

10 MR. MARTEL: Have considerations been
11 made by people involved with the possibility of using
12 insecticides other than BT since '87 -- or '86, the
13 announcement by Mr. Kerrio, have there been any
14 recommendations within the Ministry - it might have
15 been rejected - but proposed?

16 MR. CHURCHER: There have been no
17 proposals, Mr. Martel, no. They have been considered
18 at the regional level: Should we use BT, should we use
19 chemical. At the same point as the considerations: Do
20 we need to spray, or do we not need to spray are made.

21 Those considerations have been discussed
22 at regional working committee level every year in
23 preparation for the '87, '88 and '89 program.

24 However, the fact remains the proposals
25 that went forward were for BT only. In effect, the

1 Minister was not placed in the position that he had to
2 make a decision: Are we going to use chemical or BT
3 this year, because the recommendation that came forward
4 was for BT only.

5 MS. CRONK: Q. Mr. Churcher, could I --

6 MS. CRONK: I'm sorry, Mr. Martel, I
7 don't know if that --

8 MR. MARTIN: I was just wondering why -
9 if I could just do one short supplementary - why would
10 people even consider to look at those options if the
11 Minister has said no?

12 MR. CHURCHER: Well, again, it goes back
13 to my understanding of the decision in 1986, that that
14 decision was for only the year 1986 and it would be
15 looked at again in subsequent years as the need arose,
16 and that is why it was reviewed and discussed again in
17 the fall of 1987 at the committee level.

18 MS. CRONK: Q. Mr. Churcher, can I
19 suggest another reason to you as to why it was
20 considered at the committee level.

21 You and all other members of that
22 committee - I'm making an assumption. Were you a
23 member of the committee?

24 A. Yes, I was.

25 Q. All right. You and all other members

1 of the committee exercise the best professional ability
2 possible in the circumstances of performing your
3 functions on those committees; do you not?

4 A. Yes.

5 Q. All right. And in formulating a
6 proposed program as to an appropriate pest
7 management -- a program for the forthcoming year, you
8 exercise your professional judgment and make
9 professional recommendations as to which options
10 appropriate in the circumstances; isn't that so?

11 A. That is correct.

12 Q. All right. And I understand what you
13 said to be that at the field staff level consideration
14 is still given to chemical options, notwithstanding
15 that at levels in the decision-making process, if I can
16 use the word, superior to those at the field level, it
17 might not be considered at all?

18 A. That's correct.

19 Q. All right.

20 THE CHAIRMAN: Mr. Churcher, one more
21 thing. If it was a one-year program and your
22 understanding was that the Minister considered the
23 spray program in the context of one year, can you spray
24 the following year after the one year without getting
25 Ministerial approval?

1 MR. CHURCHER: No, the approval that is
2 given is for that year only.

3 THE CHAIRMAN: And it's given every year
4 by the Minister?

5 MR. CHURCHER: That is correct.

6 THE CHAIRMAN: So you would be bound by
7 the preceding year's directive until a new directive
8 was issued, is that what you are saying?

9 MR. CHURCHER: Yes, that would be...

10 THE CHAIRMAN: So he issues a directive
11 and then you carry out the program during the currency
12 of that directive, but you can't carry out the next
13 program, the following year without a further
14 directive?

15 MR. CHURCHER: Yes, that's correct.

16 THE CHAIRMAN: So in effect, no matter
17 what we call it, you are bound by what the Minister
18 decides?

19 MR. CHURCHER: Yes.

20 THE CHAIRMAN: And if he decides four
21 years in a row that you are not going to use chemical
22 insecticides, whether you want to call it a policy or
23 not, you can't use chemical insecticides?

24 MR. CHURCHER: Yes, that would be the
25 message that the field would certainly receive.

1 MS. CRONK: Thank you, Mr. Chairman.

2 Mr. Chairman, I do -- if you wouldn't
3 mind, I think it appropriate that we rise now, it is
4 ten to five, because I have longer than ten minutes.

5 THE CHAIRMAN: Okay. We will adjourn
6 until 9:00 a.m. tomorrow.

7 Thank you.

8 MS. CRONK: Thank you. Oh, I'm sorry, as
9 Ms. Murphy correctly points out, the purpose of rising
10 at all at this time is to distribute the efficacy data
11 to the witnesses so that they would have an opportunity
12 to look at it, in particular Mr. Churcher.

13 Thank you.

14 THE CHAIRMAN: Maybe give that the next
15 exhibit number?

16 MS. CRONK: Yes. Thank you, Mr.
17 Chairman.

18 THE CHAIRMAN: Is it going to be in one
19 volume?

20 MS. CRONK: One volume.

21 MR. MARTEL: I will read it tonight.

22 THE CHAIRMAN: Exhibit 659.

23 ---EXHIBIT NO. 659: Volume of MNR response material
24 to OFIA Interrogatory No. 8.

25 MR. FREIDIN: You can rest on the ninth

1 hole, Mr. Martel.

2 MR. CRONK: Excuse me, Mr. Chairman.

3 What was the exhibit number?

4 THE CHAIRMAN: 659.

5 MR. FREIDIN: What is that exhibit going
6 to be called?

7 THE CHAIRMAN: I guess it's response
8 materials to OFIA Interrogatory No. 8, Panel 12
9 evidence.

10 MS. CRONK: Yes. Thank you, Mr.
11 Chairman.

12 And I should explain that, as I indicated
13 earlier, the answer to that interrogatory provided by
14 the Ministry was, I think the term I used, was very
15 fulsome and this was part of the response.

16 MR. CHURCHER: Ms. Cronk, can I ask if
17 there is anything in particular in here that you would
18 like to discuss tomorrow morning?

19 MS. CRONK: That in context of the
20 relationship we've had in the last 20 minutes, is a
21 fair question, Mr. Churcher.

22 I will be reviewing and asking you
23 questions, Mr. Churcher, about the results of the
24 various treatment programs carried out in each of the
25 years indicated in this document, but I don't expect

1 you to know, unless you already do of course, in detail
2 the contents of all of the reports, save for the result
3 section for each insect.

4 Does that help?

5 MR. CHURCHER: It will help greatly.

6 Thank you.

7 MS. CRONK: Thank you very much, Mr.

8 Chairman.

9 THE CHAIRMAN: Very well. 9:00 a.m.
10 tomorrow. Thank you.

11 ---Whereupon the hearing adjourned at 4:55 p.m., to be
12 reconvened on Thursday, June 15th, 1989, commencing
at 9:00 a.m.

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